

PFAFF

coverlock 4872

Service Manual



1st Edition February 1999

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Foreword

This service and repair manual is designed to help you carry out all repairs on the machine quickly and correctly.

Adjustments should only be made if the settings deviate from the requirements described here.

When checking or adjusting a machine, always proceed in the order described here.

For easy reference every workstep is marked with a dot.

Differing worksteps are marked with a circle or square.

The indications "right", "left", "top", "bottom", "front" and "back" always refer to the upright machine with the controls facing the operator.

When assembling dismantled machines, set the machine to approximately the right settings.

This makes any subsequent fine adjustment much easier.

Unless otherwise specified, the handwheel must always be turned to the front.

When carrying out maintenance work or when replacing mechanical parts or accessories the machine is to be separated from the power supply by unplugging the mains plug.

An electrical safety test must be carried out following repair work, including mechanical repairs.

According to the German Machine Safety Act of 24.06.1958, VDE regulations are the recognized rules in the field of electrical engineering and form the basis for electrical safety tests of technical appliances.

The required electrical tests for appliances are contained within the regulations for the repair, modification and testing of used electrical appliances (VDE 0701, edition 05.93), laid out in section 4.

It is obligatory to test our electrical appliances according to VDE 0701 following any repairs to our electrical appliances.

Outside Germany similar regulations apply which are on the whole identical to the requirements of VDE 0701.

Please also observe sections 32 to 34 of the adjustment and repair instructions.

Therefore a specialist must always be consulted when carrying out repairs on electrical appliances.

The microswitch must always be functionally tested following all repair work.

Notes on the sewing machine regarding ambient conditions, handling, cleaning and safety

Ambient conditions:

The recommended ranges are:

Ambient temperature	- 10° C to 40° C
Humidity	20 % to 80 %

This machine is a high-quality electro-mechanical device, designed for supervised use at home.

Make sure that it is not subjected to:

dust, high humidity, direct sunlight, static electricity, heat-producing objects, corrosive chemicals or liquids.

The machine must be placed on a flat, stable surface allowing good ventilation.

Handling:

Always make sure not to damage the machine by knocking or dropping it.

Cleaning:

Housing:

To clean the housing, use a dry, clean, soft, lint- free cloth.

To remove any stubborn stains, use a soft cloth with a neutral cleansing agent for plastic materials.

Note:

Do not use any insecticides or chemical products such as petrol or liquid chemicals to clean the housing.

Display:

The display can be cleaned if necessary using a soft cloth moistened with a little water.

Safety:

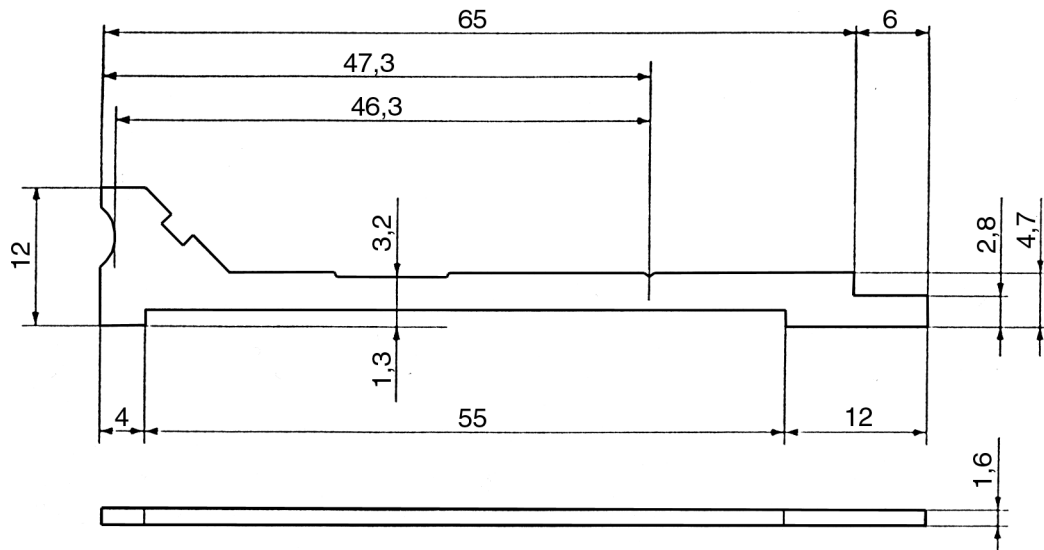
1. The machine must be commissioned in accordance with the indications on the specification plate.
2. Do not insert any objects into the machine's openings.
3. Do not use the sewing machine if:
 - there is visible damage
 - improper function
 - it is wet, e.g. condensation.
4. Do not pull the mains plug out of the socket by its cord.
5. Should this appliance be used for a purpose other than that intended, or if it is incorrectly operated, then we will not accept liability for any damage caused.
6. To avoid the risk of electric shock, do not open the machine. There are no parts inside the machine which can be repaired by the operator. This is solely the responsibility of our qualified service staff.
7. Only original PFAFF parts are to be used.

Specifications of the coverlock 4872

Number of needles and threads:	2 needles, 5-, 4- or 3-thread 1 needle, 2- or 3-thread
Needles:	system ELx705, cat. no. 2002 thickness Nm 80/12, 90/14
Seam width:	1.4 mm – 9.0 mm
Adjustable cut width:	2.5 mm
Cover stitch width:	2.5 mm, 5.0 mm
Stitch length:	0.5 mm – 4 mm adjustable
Lubrication:	manual
Differential feed:	1:0.5 ~ 1:2
Presser foot height:	4.5 mm
Overedge stroke:	2.0 mm
Presser foot:	exchangeable
Adjustable presser foot pressure:	6 positions
Edge-blade stroke:	7.2 mm
Glare-free sewing light max.:	12 V, 5 W, bayonet socket
Master switch:	for motor and sewing light
Motor:	110 - 127 V 50 - 60 Hz 140 W 220 - 240 V 50 - 60 Hz 145 W
Max. sewing speed:	1500 stitches per minute
Foot control:	electronic control
Machine dimensions:	width: 355 mm, height: 290 mm, depth: 300 mm
Weight:	approx. 10 kg

Adjustment gauge of the coverlock 4872

Order number: 29-924 993-82/032



A = Needle bar height (**12.0 mm**)

B = Presser foot height (**4.7 mm**)

C = Clearance of upper overedge looper to left needle (**6.0 mm**)

D = Clearance of lower overedge looper to left needle (**2.8 mm**)

E = Height of lower overedge looper (**65 mm**)

F = Clearance of two thread chainstitch looper to needle "L2" (**1.6 mm**)

G = Height of feed dog (**1.3 mm**)

H = Clearance between the main and the differential feed dog (**3.2 mm**)

I = Clearance of the looper thread guide to the upper overedge looper (**47.3 mm**)

Dismantling the housing of the coverlock 4872

- Remove the mains plug from the machine.
- Unscrew and remove the fastening screw 1 (fig. 1).
- Remove the presser foot holder completely.
- Remove the needles.
- Remove the spool disc and the thread spool centering pieces (fig. 2).
- Push the complete thread spool stand forward toward the machine.
- Unscrew and remove the fastening screw 2.
- Push the complete spool stand slightly to the right and remove to the rear.
- Unscrew the fastening screw 3 (fig. 3).
- Remove the face cover to the left.

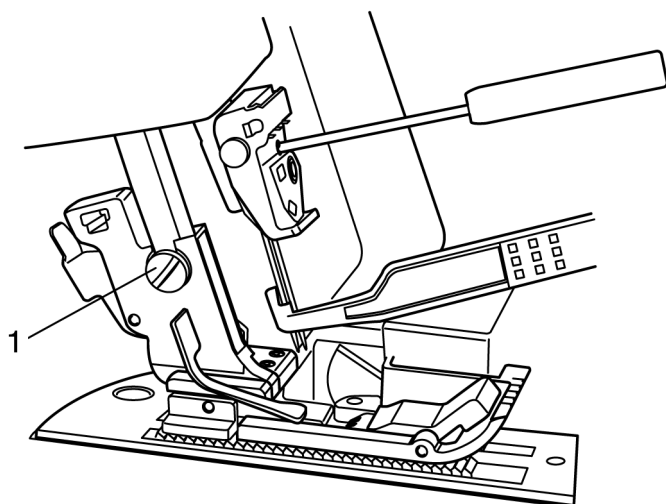


Fig. 1

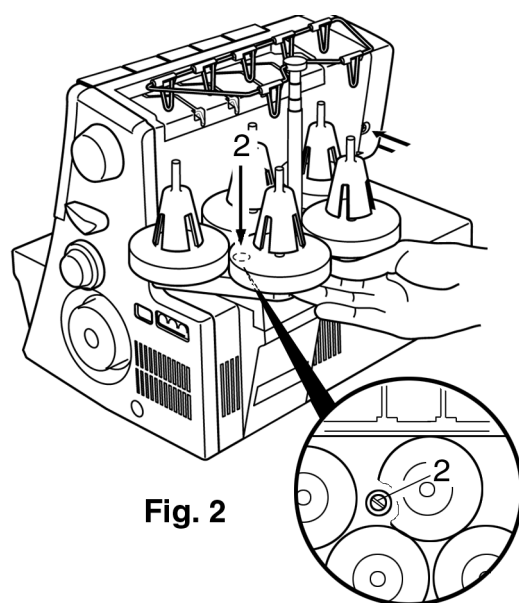


Fig. 2

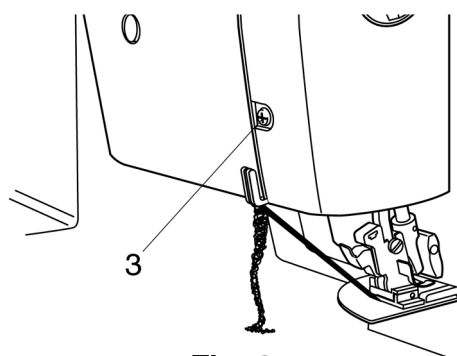


Fig. 3

- The following parts are now removed to the right (fig. 4):
1. Stitch length adjustment knob 4 and the regulator wheel 5 for the differential feed
 2. Presser foot 6
- Remove the covers 7 on the stand cover.
 - Unscrew and remove the fastening screws 8 on the stand cover.
 - Remove the stand cover carefully to the right.
 - Unscrew and remove both fastening screws 9.
 - Slightly raise the arm cover at the front near the plus/minus keys until the covers are free.
 - Remove the arm cover carefully toward the front.

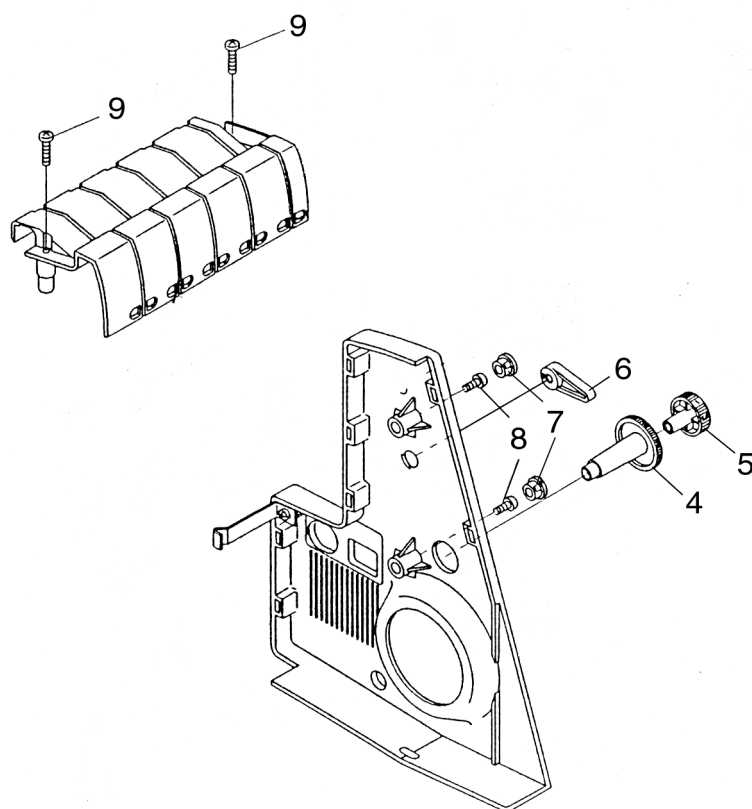


Fig. 4

- Turn the handwheel in the normal direction until the needle bar is at its highest position.
- Push the looper cover as far as possible to the right and pull it down.
- Unscrew and remove the three fastening screws 10 on the lower housing panel (fig. 5).
- Remove the lower housing panel.
- Pull the cover 11 slightly on the left and right sides and remove carefully (fig. 6).
- Turn the handwheel in the normal direction until the take-up lever is in the middle of the guide.
- Unscrew and remove both fastening screws 12 on the guide 13.
- Remove the guide 13 with the thread guides 14 and 15.
- Remove the covers 16 (fig. 7).
- Unscrew and remove the fastening screws 17.
- Lift the rear housing panel slightly until the locking pins are clear, then remove the housing panel.
- Pull the front housing panel carefully toward the front (fig. 8, on page 10).

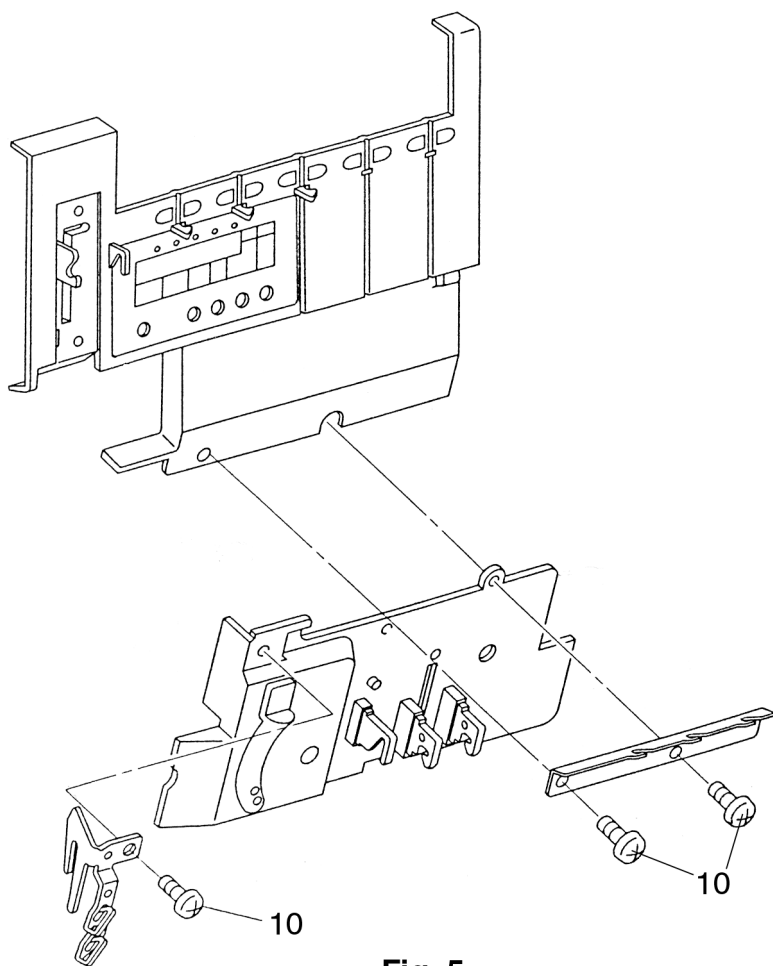


Fig. 5

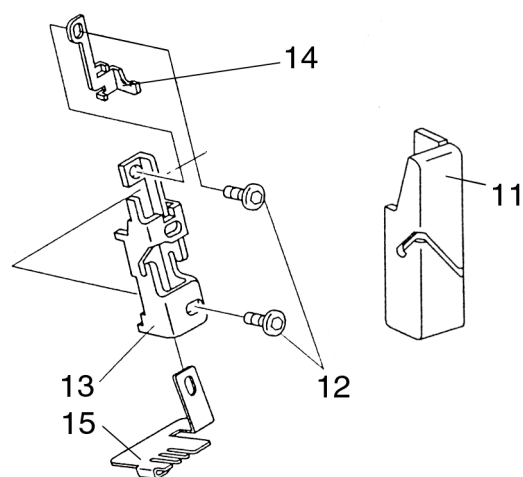


Fig. 6

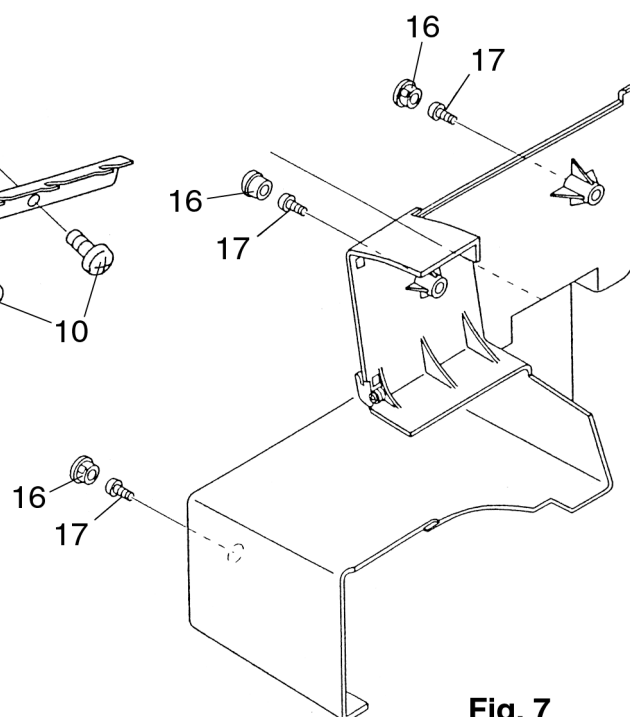


Fig. 7

- Remove the seven cables “A” to “H” from the circuit board.

Note:

The cables “A” to “E” stem from the stepping motors for the thread tension barrels.

The cable “F” is for the PCB/LCD power supply.

The cable “G” is for the stepping motor circuit board.

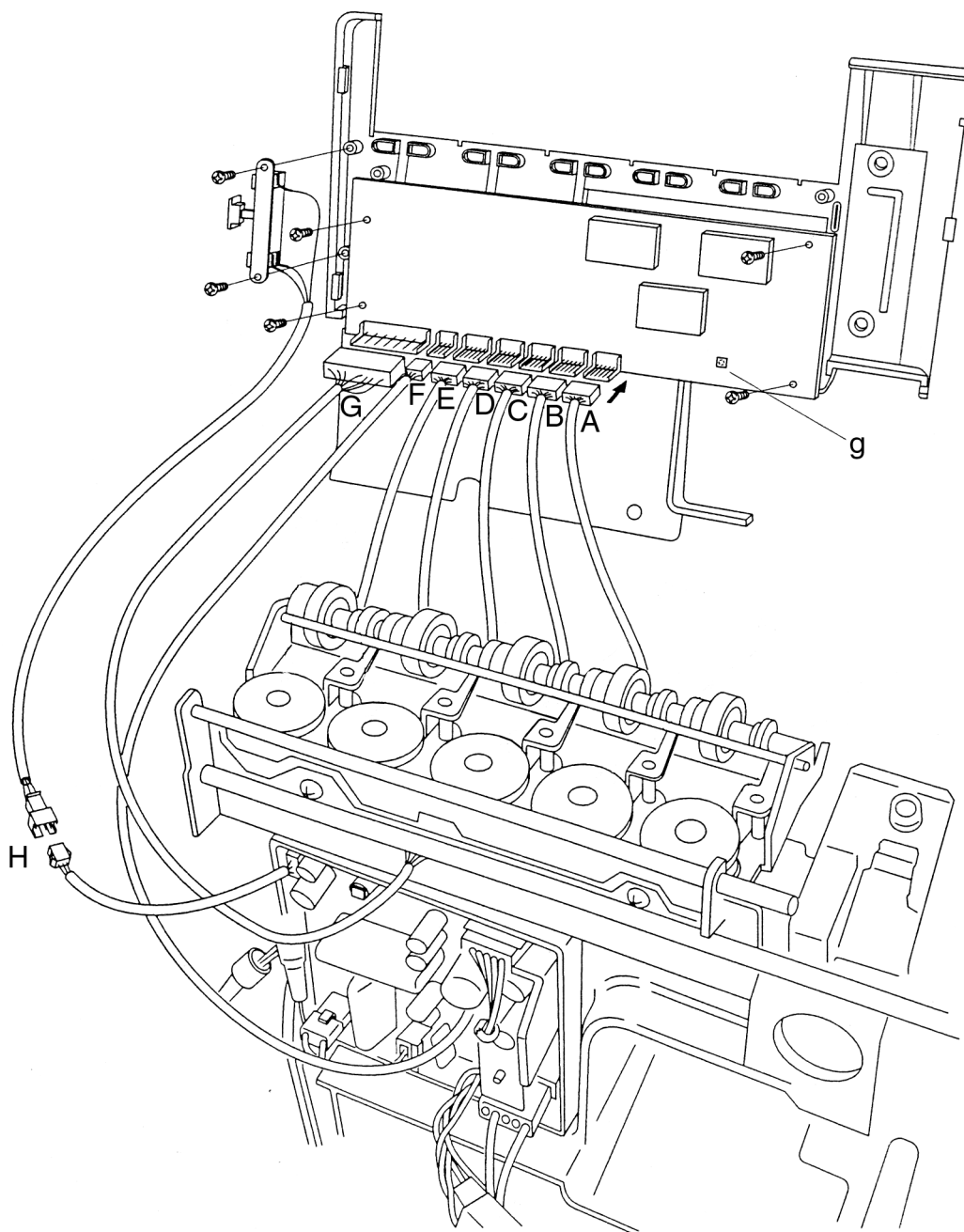


Fig. 8

- Unscrew and remove the four fastening screws 18 on the baseplate (fig. 9).
- Remove the machine housing carefully from the baseplate.
- Unscrew and remove the fastening screws 19.
- Remove the swivel plate 20.

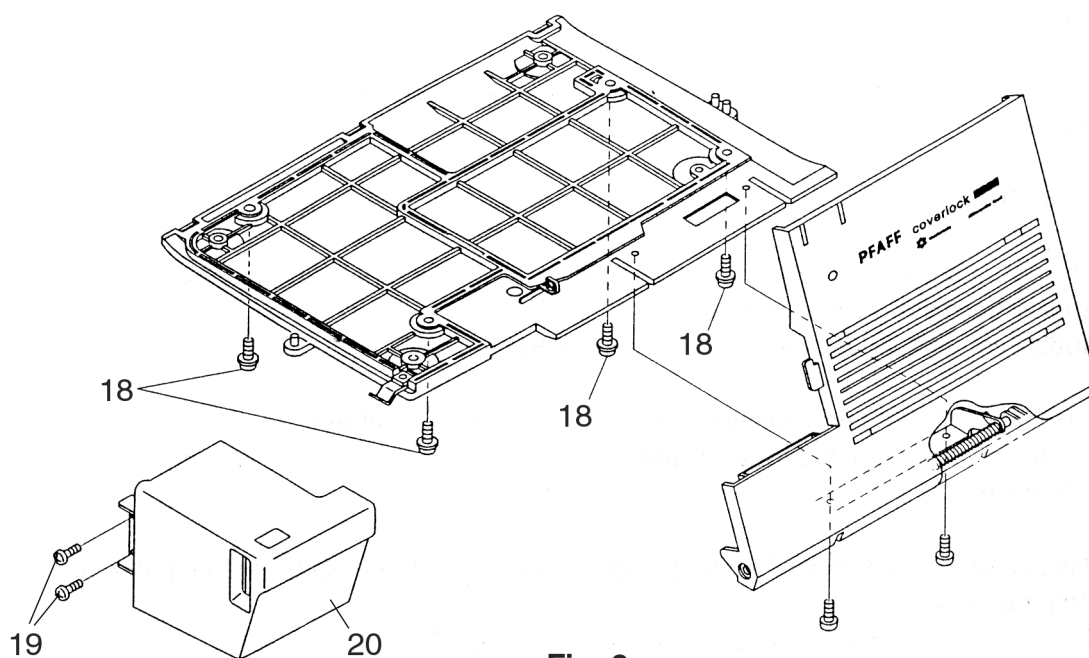


Fig. 9

Requirements for adjusting the coverlock 4872

Requirement:

When the needle is at its lowest position, the lower overedge looper must be at the left point of reversal and the upper looper point, in the downward movement, approx. 5 mm below the needle plate.

The two thread chainstitch looper is at the right point of reversal, when it is at its lowest position.

The eccentrics are set in accordance with the illustrated figures to provide the adjusting requirements.

Check:

1. The screw "a" of the retaining collar 2 must be in line with the screw of the drive eccentric 1 (fig. 6). The main shaft must not have any axial play.

Turn the handwheel (90°) in the opposite direction of the normal direction. Check whether the screw of the retaining collar 2 and the eccentric 3 are aligned (fig. 5).

2. Turn the handwheel in the normal direction until the needle bar is at its highest point (fig. 1). Check the position of the counterweight A in accordance with fig. 2.

Note:

When the eccentric 3 is set correctly, it is possible to see the fastening screw from above (fig. 3).

3. Turn the handwheel (180°) in the normal direction. Check that the counterweight 9 and the eccentrics 7 and 8 are set in accordance with fig. 4.
4. Turn the handwheel (180°) in the normal direction. Check that the screw "a" of the retaining collar and the screws of the eccentrics 1,6 and 7 are set in accordance with fig. 6.
5. Turn the handwheel (90°) in the normal direction. Check that positions of the eccentrics 1 and 4 are set in accordance with fig. 7.
6. Turn the handwheel (90°) in the normal direction. Check that positions of the eccentrics 4 and 5 are set in accordance with fig. 8.

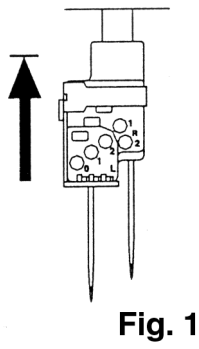


Fig. 1

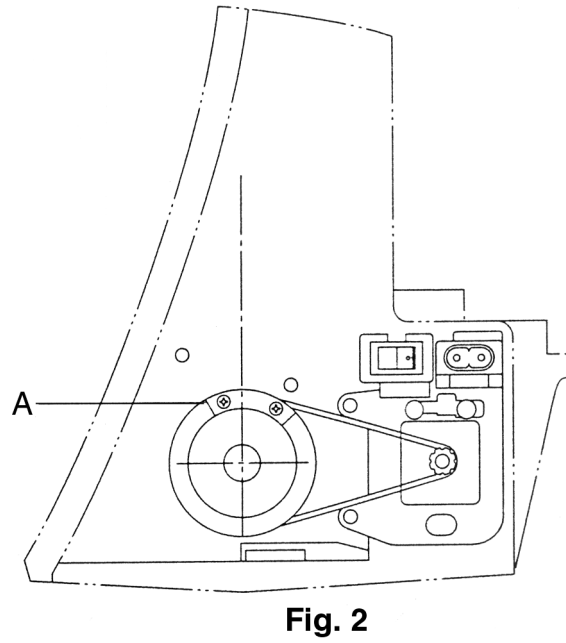


Fig. 2

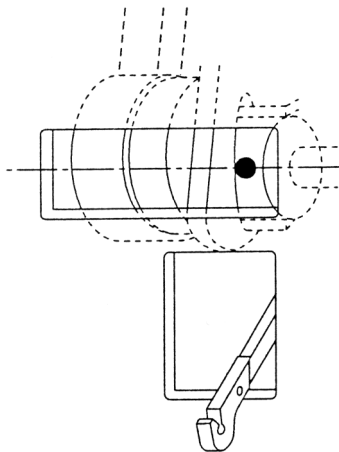


Fig. 3

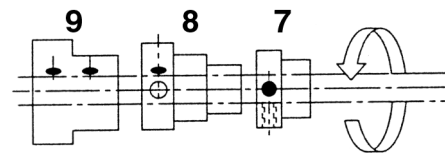


Fig. 4

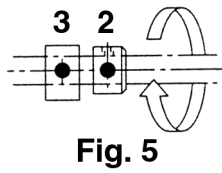


Fig. 5

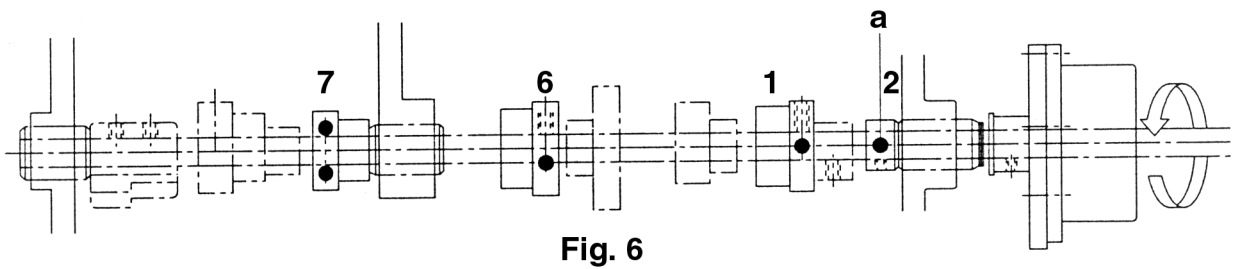


Fig. 6

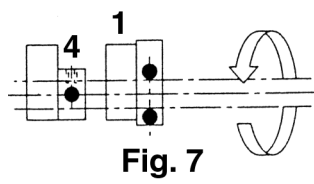


Fig. 7

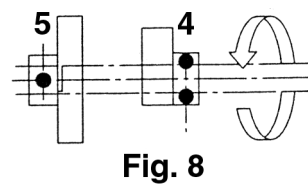


Fig. 8

Setting:

- If not set correctly, the screws of the eccentrics, of the retaining collar and of the counterweight will be loosened.
- The parts must be set accordingly and the screws must be retightened.

Position and function of the eccentrics

1. Drive eccentric for the needle bar movement
2. Retaining collar for the main shaft
3. Drive eccentric for the feeding movement
4. Drive eccentric for upper overedge looper
5. Take-up-lever eccentric for the two thread chainstitch looper
6. Drive eccentric for the lower overedge and two thread chainstitch looper
7. Drive eccentric for the ellipsoidal movement
8. Drive eccentric for the stroke and blade movement
9. Counterweight

Notes:

Needle bar height and needle penetration points

1. Setting the needle bar height

Requirement:

The vertical clearance between the overedge needle "R1" and the top edge of the needle plate must be 12 mm when the needle bar 1 is at its upper dead center (fig. 1).

Check:

- Turn the handwheel in the normal direction until the needle bar 1 is at its upper dead center (u.d.c.).
- Insert a new needle Nm 90 into "R1". The needle must be inserted into the needle holder 2 as far as it will go.
- Check the needle bar height using the adjustment gauge (measurement A).

Setting:

- Remove the face cover.
- Turn the handwheel in the normal direction until the needle bar 1 is at its upper dead center (u.d.c.).
- Slightly loosen the screw 3 of the needle bar connection (fig. 2).
- Move the needle bar 1 upwards without turning it until the needle touches the adjustment gauge (measurement A).
- Tighten the screw 3.

Test:

- Check the clearance.
The needle holder must be parallel to the machine housing.
- The sides of the needles "L0", "L1" and "L2" must not touch the sides of the needle plate (fig. 3).

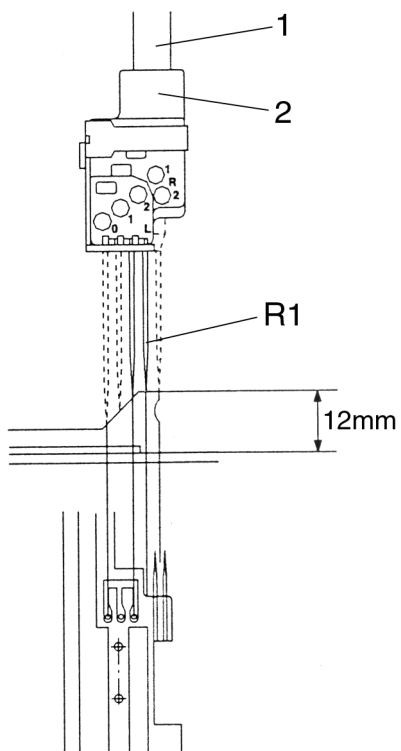


Fig. 1

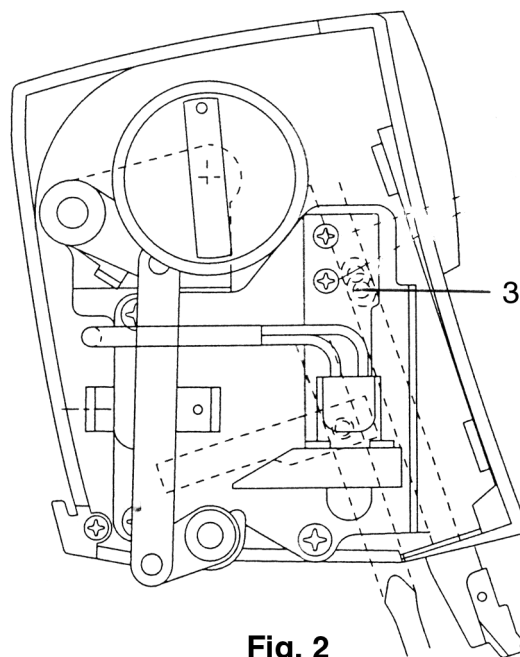


Fig. 2

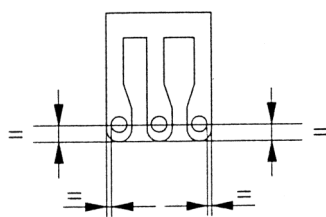


Fig. 3

Feeding system

2. Setting the main feed dog in the sewing direction with regard to the needle plate

Requirement:

When the stitch length is set to “4”, the main feed dog must be centered between the front and the back of the needle plate in the sewing direction (fig. 4).

The main feed dog must also be centered laterally.

Check:

- Loosen the screw 1 on the presser foot holder (fig. 5).
- Remove the presser foot holder 2.
- Set the maximum stitch length and the standard differential stroke.
- Turn the handwheel in the normal direction until the feed dog is flush with the upper surface of the needle plate.
- Carry out a visual check.

Setting 1:

- Remove the housing cover as described in the adjustment and repair instructions.
- Set the maximum stitch length and the standard differential stroke.
- Slightly loosen both fastening screws 3 (fig. 6).
- Loosen the fastening screw 5 on the retaining collar.
- Move the feed dog carrier 4 with the retaining collar until the feed dog is centered to the needle plate in the lateral direction.
- Tighten the fastening screws 3 and 5.
Repeat this procedure until the settings are correct.

Setting 2:

- Slightly loosen the fastening screws 3.
- Move the feed dog carrier 4 until the feed dog is centered to the needle plate in the sewing direction.
- Tighten the fastening screws 3.

Test:

- Check the lateral distance between the main feed dog and the needle plate.
- Check that the machine runs freely with the maximum stitch length set.

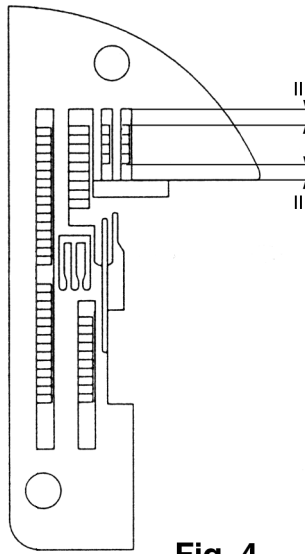


Fig. 4

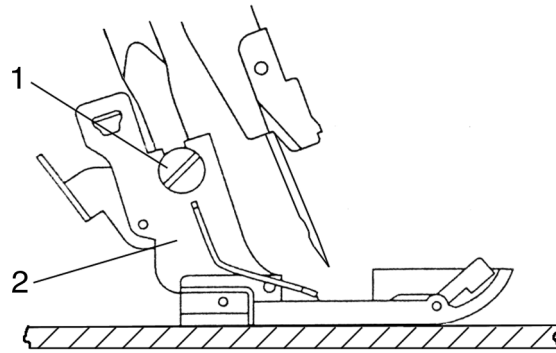


Fig. 5

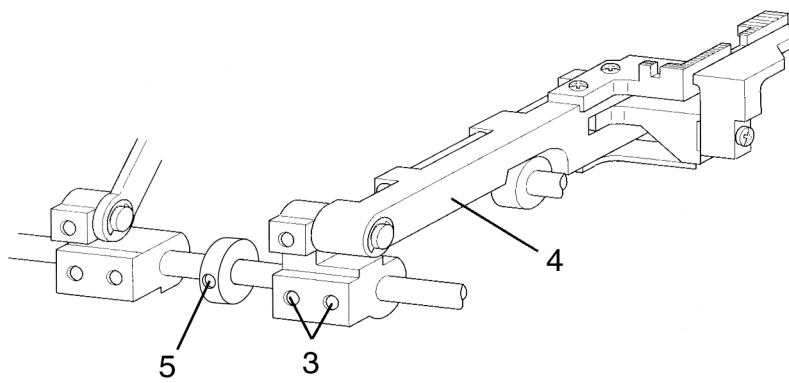


Fig. 6

3. Setting the feed dog height

Requirement:

The tips of the feed dog teeth, when they are at their highest operating position, must project 1.3 mm over the needle plate (fig. 7).

Check:

- Set the stitch length adjustment knob to "0.5".
- Set the regulator wheel for the differential feed to "1".
- Place the adjustment gauge on to the needle plate.
- Turn the handwheel in the normal direction until the feed dog is at its highest operating position.
- Carry out a visual check.

Setting:

- Remove the needles and the presser foot holder completely.
- Loosen the fastening screw 6.
- Turn the adjustment eccentric 7 until the feed dog teeth rest against the adjustment gauge.
- Repeat this procedure until the setting is correct.
- Tighten the fastening screw 6.

Test:

- Carry out a visual check.

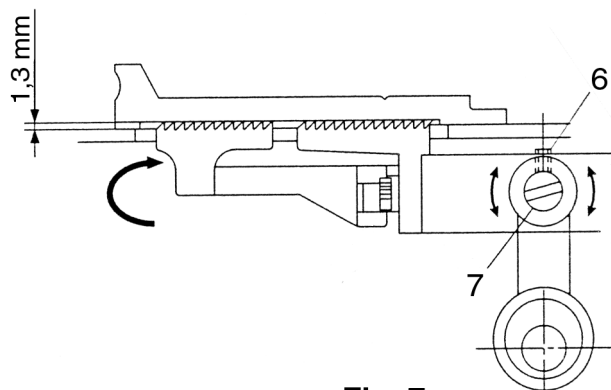


Fig. 7

4. Setting the differential feed dog

Requirement:

When the differential feed dog is at its highest operating position with setting “1” and with the stitch length set “0.5”, the clearance to the main feed dog should be 3.2 - 3.4 mm (fig. 8).

Check:

- Set the stitch length adjustment knob to “0.5”.
- Set the regulator wheel for the differential feed to “1”.
- Turn the handwheel in the normal direction until the feed dog is at its highest operating position.
- Place the adjustment gauge on to the needle plate and check the clearance (measurement H) to the main feed dog.

Setting:

- Loosen the fastening screw 8.
- Place the adjustment gauge on to the needle plate.
- Push the differential feed dog towards the rear against the adjustment gauge.
- Tighten the fastening screw 8.

Test:

- Carry out a visual check.

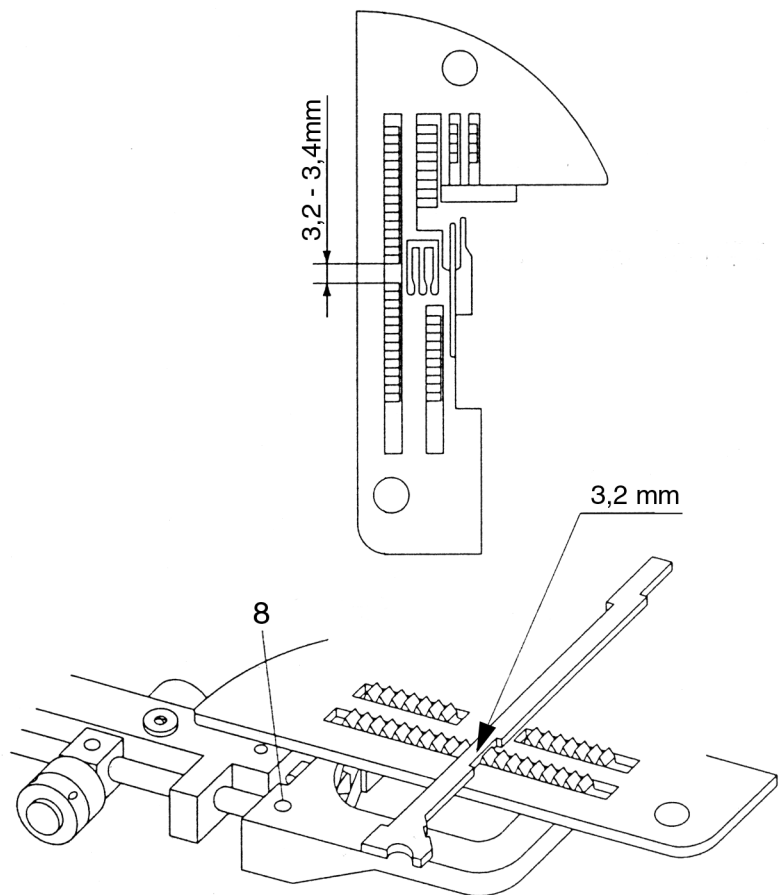


Fig. 8

5. Setting the main feed-dog height

Requirement:

The main feed dog 9 and the differential feed dog 10 must be positioned at the same height (fig. 9).

Check:

- Set the stitch length adjustment knob to "0.5".
- Set the regulator wheel for the differential feed to "1".
- Turn the handwheel in the normal direction until the main feed dog, in its upward movement, is flush with the surface of the needle plate.
- Carry out a visual check.

Setting:

- Loosen the fastening screw 11 on the main feed dog.
- Move the main feed dog 9 until the feed dog is flush with the surface of the needle plate.
- Tighten the fastening screw 11 on the main feed dog.

Test:

- Carry out a visual check.

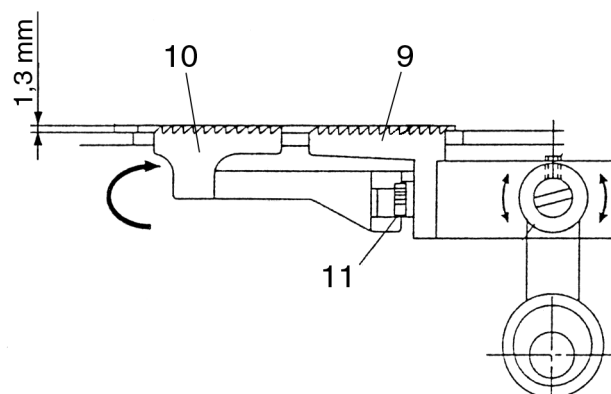


Fig. 9

6. Setting the presser bar height

Requirement:

With the presser bar lever raised, there must be a 4.7 mm gap between the needle plate and the bottom of the presser foot.

Check:

- With the presser bar lever raised, slide the adjustment gauge under the presser foot as in figure 10.
- Check the height of the presser bar (measurement B).

Setting:

- Remove the face cover as described in the adjustment and repair instructions.
- Unscrew and remove the fastening screws 12 and the light bulb socket completely.
- Loosen the screw 13 on the presser bar holder.
- Move the presser bar until the bottom of the presser foot is positioned, without any play, on the adjustment gauge.
- Slightly tighten the screw 13.
- Lower the presser foot and, by rotating the presser bar, align the presser foot slots with the needle plate slots.
- Retighten the screw 13.

Test:

- As described under "Requirement".

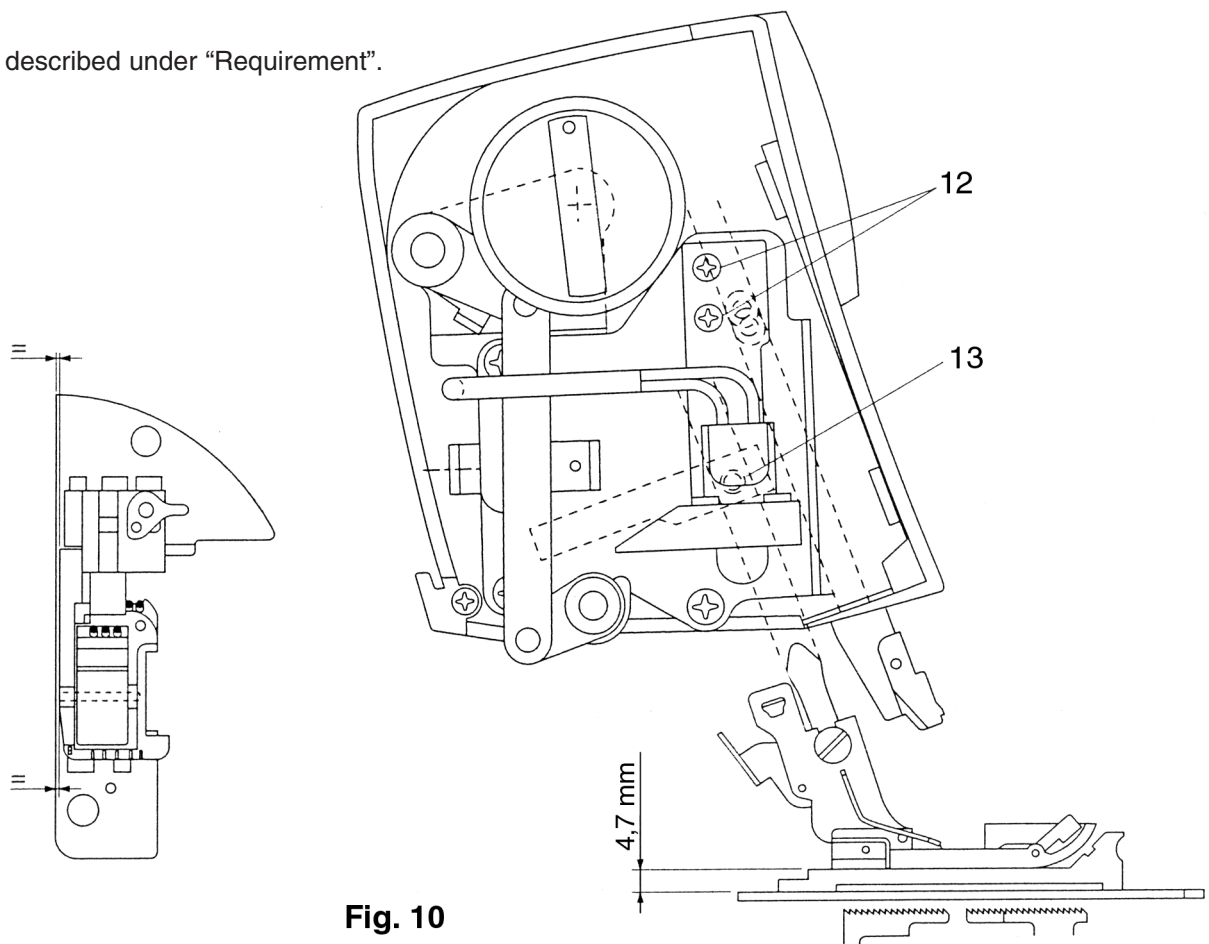


Fig. 10

7. Setting the differential feed

Requirement:

Both feed dogs must have the same length of feeding movement, when the stitch length is set at “4” and the differential setting at “1” (fig. 11).

Check:

- Set the stitch length adjustment knob to “4”.
- Set the regulator wheel for the differential feed to “1”.
- Turn the handwheel in the normal direction and check that both feed dogs have the same length of feeding movement.

Setting:

- Slightly loosen fastening screw 14.
- Adjust the degree of the rod 15, until both feed dogs move with the same clearance.
- Repeat this procedure until the setting is correct.
- Tighten the fastening screw 14.

Test:

- As described under “Requirement”.

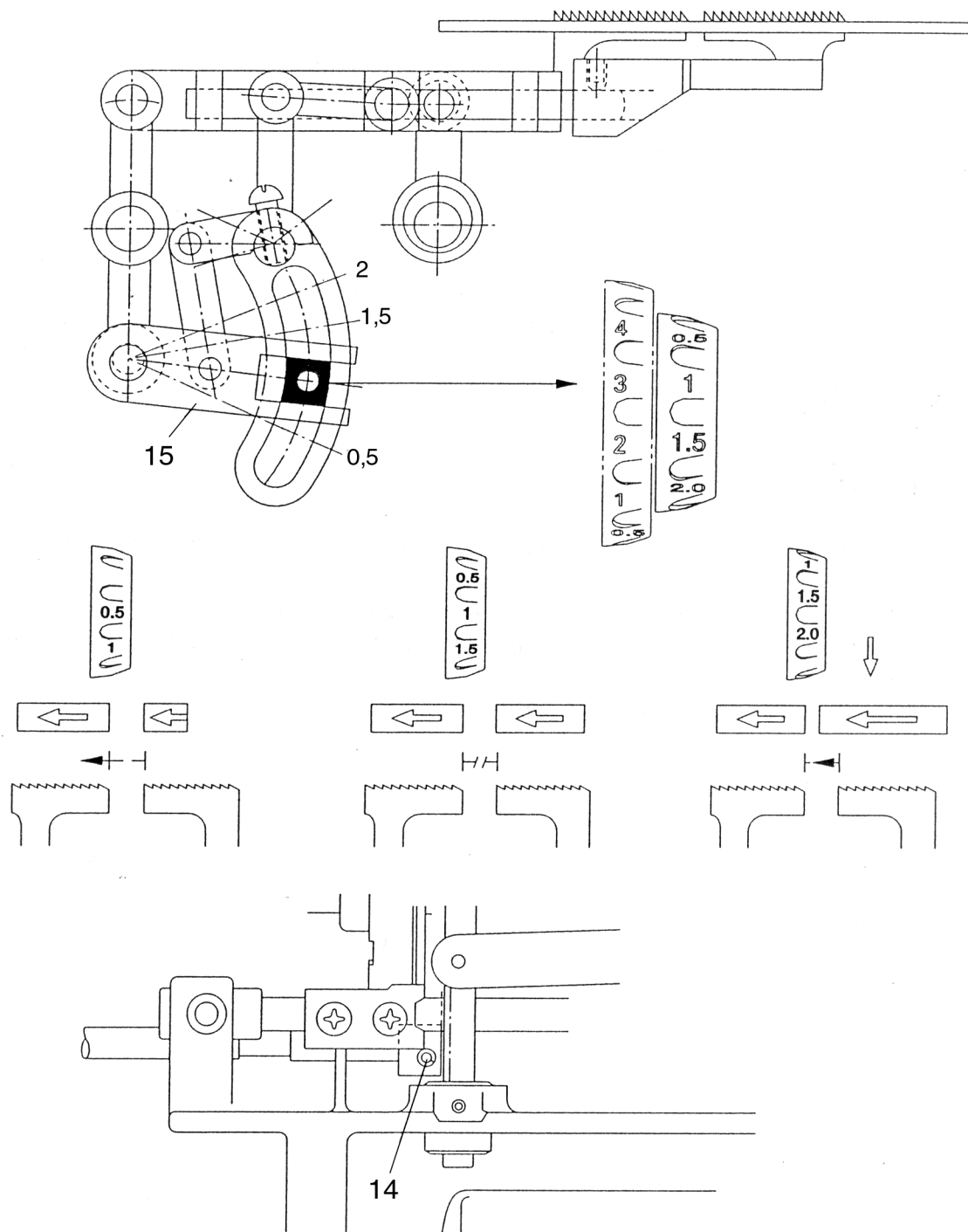


Fig. 11

8. Setting the movement of the feed dog stroke and the upper blade

Requirement:

The movement of the feed dog stroke and the upper blade must be synchronized (fig. 12).

Note:

Before any adjustments can be made, the needle bar height and the feed dog height must be set correctly.

Check:

- Insert a new needle system ELx705 in "R1".
- Turn the handwheel in the normal direction until the needle bar is at its highest position.
- The upper blade should also be at its highest operating position.
- Carry out a visual check.

Setting:

- Turn the handwheel in the normal direction until the needle eye is positioned in accordance with fig. 13.
- Loosen the fastening screws 16 on the stroke eccentric (fig. 14).
- Turn the stroke eccentric until the markings "A" and "B" are aligned.
- Tighten the fastening screws 16 on the stroke eccentric.

Test:

- Carry out a visual check.
- Turn the handwheel in the normal direction and check that the machine runs freely.

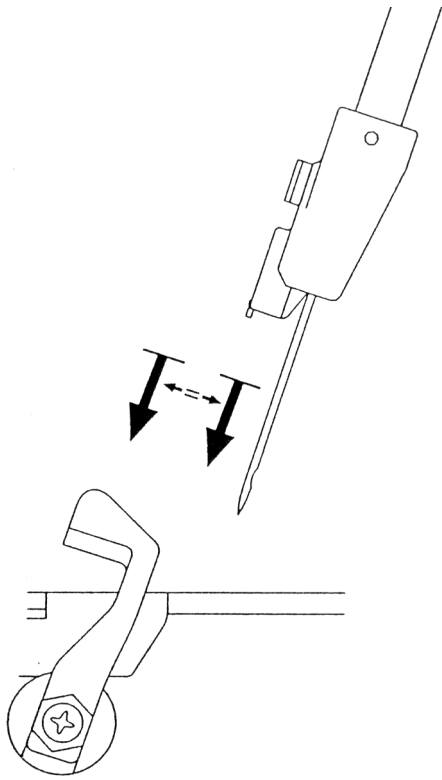


Fig. 12

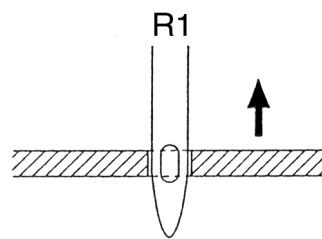


Fig. 13

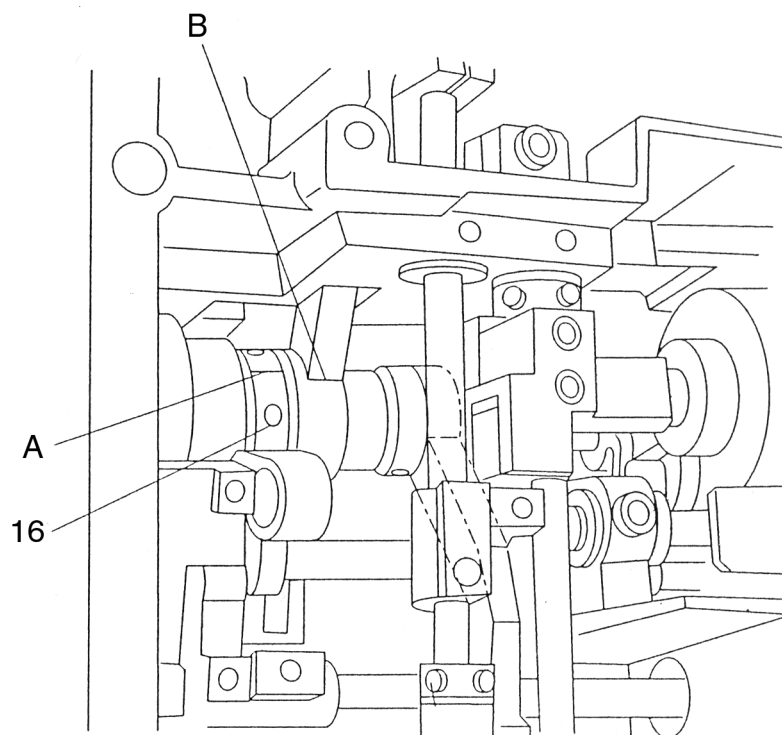


Fig. 14

9. Setting the feed dog movement

Method:

When the rising needle leaves the fabric, the feed dog moves up above the needle plate.

The raised feed dog pushes the fabric to the rear.

After completing the feed movement the feed dog drops down below the needle plate surface and the needle penetrates the fabric.

The feed dog returns to its starting position underneath the needle plate.

Requirement:

When the rising needle point is aligned with the upper surface of the needle plate, the feed dog must be in the position shown in fig. 15/A2.

Note:

The feed dog height and the movement of the feed dog stroke must be set correctly.

Check:

- Insert a new needle system ELx705 in "L0".
- Set the stitch length to "4" and the standard differential stroke to "1".
- Place a piece of paper under the presser foot (fig. 16).
- Lower the presser foot.
- Turn the handwheel in the normal direction until the needle point slightly penetrates the paper (fig. 17).
- Turn the handwheel in the opposite direction until the needle slightly penetrates the paper again.
- Carry out a visual check.
- The needle and the feed dog must move upward in accordance with fig. 15/A2.

Setting:

- Set the stitch length to "4" and the standard differential stroke to "1".
- Loosen the fastening screw 17 on the feed eccentric 3 (fig. 18).
- Turn the feed eccentric 3 until the setting corresponds with "Check".
- Tighten the fastening screw 17 on the feed eccentric 3.

Test:

- Carry out a visual check.

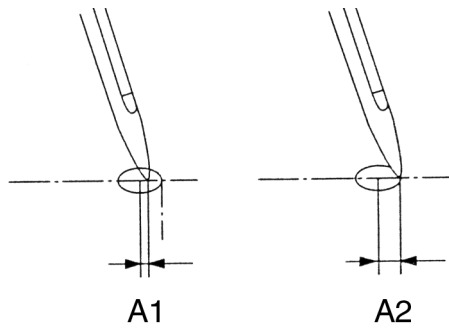


Fig. 15

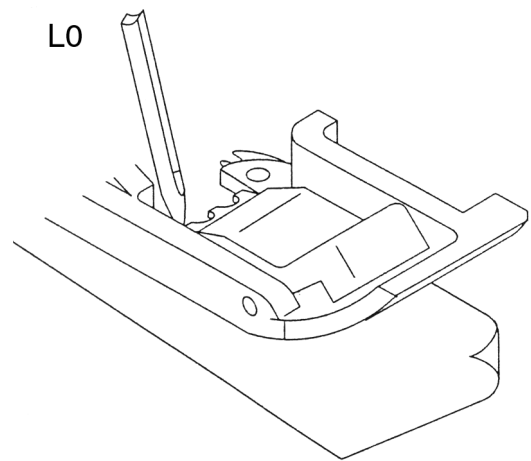


Fig. 16

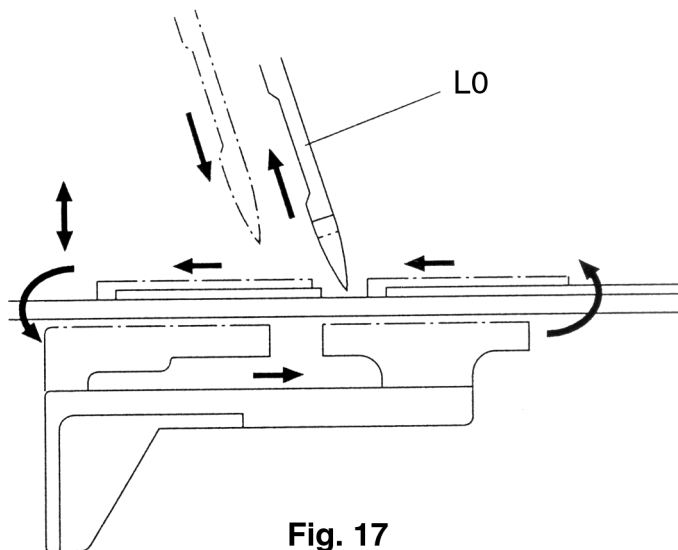


Fig. 17

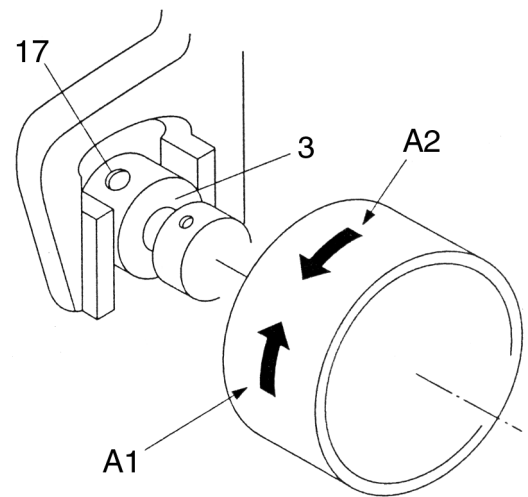


Fig. 18

Setting the lower overedge looper

10. Setting the height of the lower overedge looper

Requirement:

The vertical clearance between the looper point and the looper drive shaft must be 65 mm (fig. 19).

Note:

The looper drive shaft must not have any axial play.

Check:

- Remove the housing as described in the adjustment and repair instructions.
- Turn the handwheel in the normal direction until the looper point is at its right point of reversal.
- Mount the adjustment gauge.
- Check the height of the lower overedge looper (measurement E).

Setting:

- Turn the handwheel in the normal direction until the looper point is at its right point of reversal.
- Loosen the screw 1 on the overedge looper.
- Mount the adjustment gauge.
- Move the looper until it has a vertical clearance of 65 mm to the looper drive shaft.
- Remove the adjustment gauge.
- Tighten the screw 1 of the overedge looper.

Test:

- As described under "Requirement".

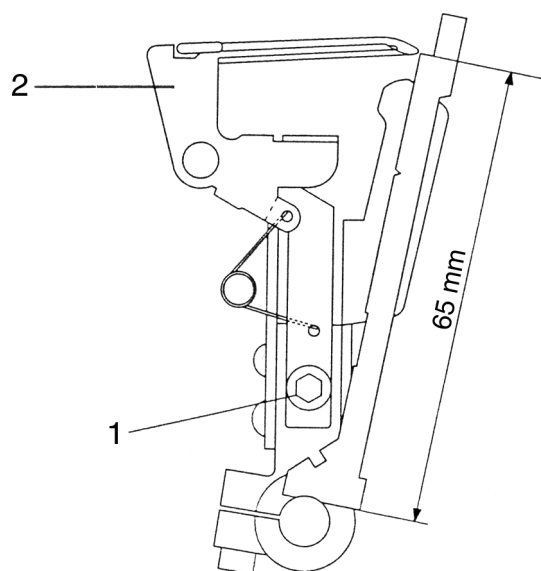


Fig. 19

11. Setting the timing of the lower overedge looper

Note:

The timing of the lower overedge looper is set by turning the handwheel back and forth.

This method guarantees a 100 % setting.

This is very important for machines with double eccentric for the overedge and two thread chainstitch loopers.

Check:

- Turn the handwheel until the needle bar is at its lowest position.
- Push the needle rise clamp (00-870 137-01) over the needle bar.
- Turn the handwheel in the normal direction until the looper point 2 is positioned in the exact middle of the needle "R1".
- Push the needle rise clamp up against the machine's housing and secure lightly (fig. 20).
Pay attention to the correct positioning!
- Turn the handwheel in the opposite direction to the normal direction (fig. 21) until the needle rise clamp rests against the machine's housing.
- The looper point 2 must now be positioned in the exact middle of the right needle, when the handwheel is turned back and forth (fig. 20).

Setting:

- Slightly loosen both screws 7 on the drive eccentric (fig. 22).
- Attach the needle rise clamp again and repeat the operation as described under "Check".
- Turn the drive eccentric until the looper point is in the middle of the rear of the right needle.
- Repeat this procedure, until the setting is correct.
- Tighten both screws 7 of the drive eccentric.

Test:

As described under "Requirement".

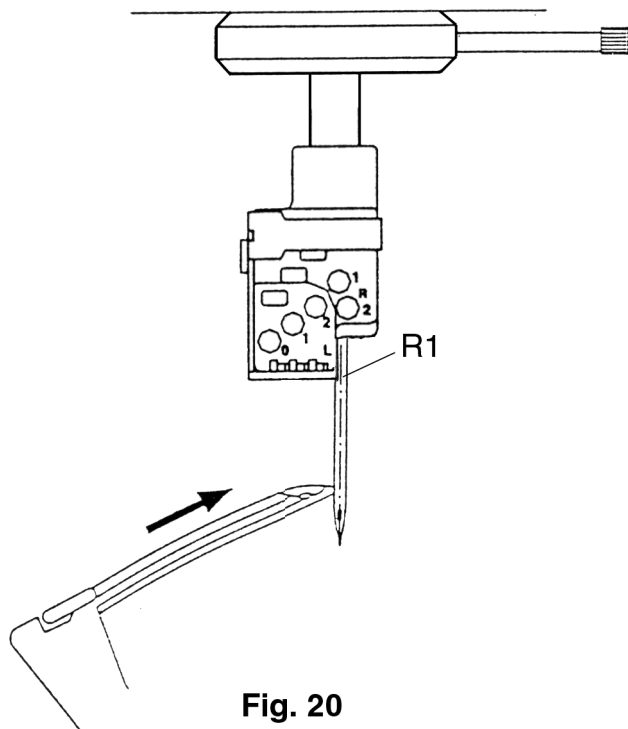


Fig. 20

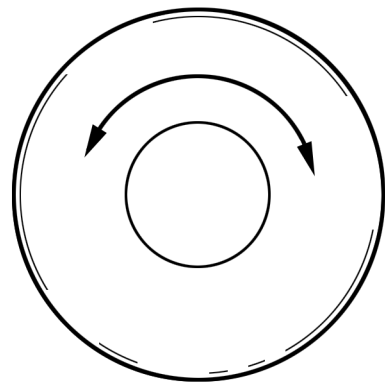


Fig. 21

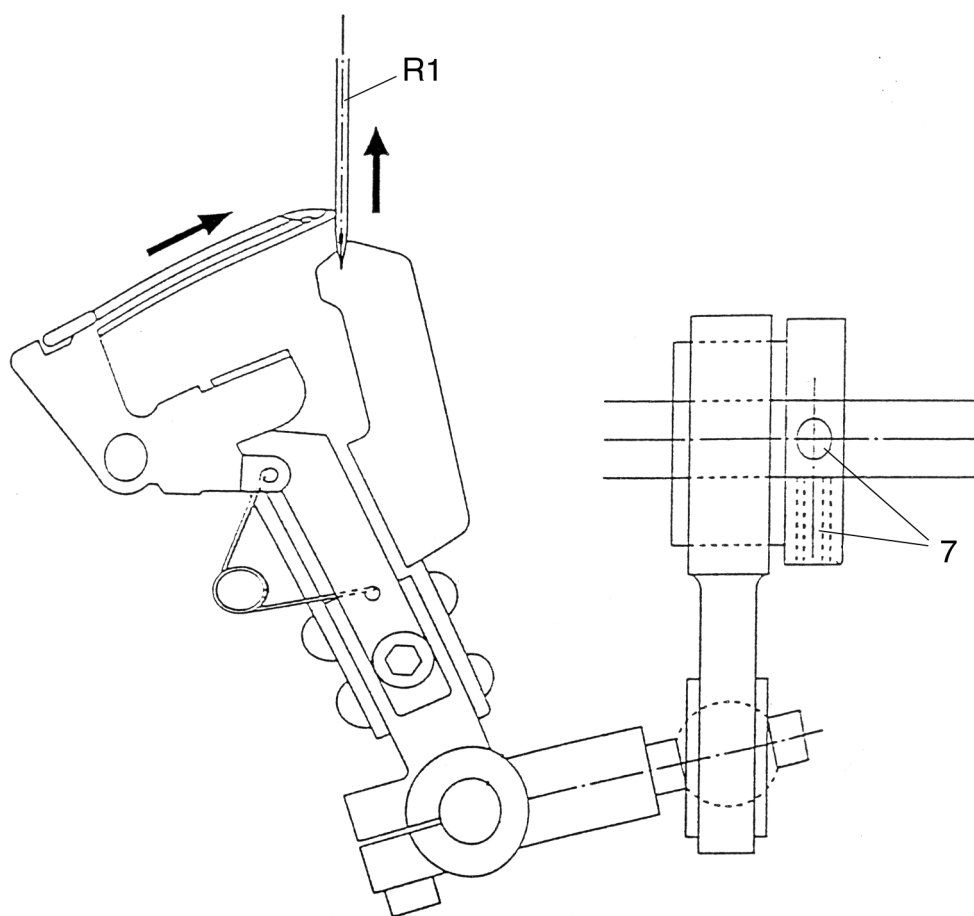


Fig. 22

12. Setting the looper-to-needle clearance

Requirement:

When the looper point is in the scarf of the needle while moving to the right, the looper-to-needle clearance must be 0 - 0.05 mm (fig. 23).

Note:

A new needle system ELx705 Nm 90 must be used for the following steps.

Check:

- Remove the presser foot and the needle plate.
- Slightly loosen both fastening screws 3 and push the needle guard 4 slightly toward the rear.
- Turn the handwheel in the normal direction until the looper point is exactly in the scarf of the needle, while moving to the right.
- Check the clearance between the point of the looper and the needle.

Setting:

- Turn the handwheel in the normal direction until the looper point, when moving to the right, is positioned exactly in the scarf of the needle "R1".
- Loosen the screw 5 on the looper lever 6.
- Set the looper-to-needle clearance by moving the looper lever 6.
- Tighten screw 5.

Test:

- As described under "Requirement".

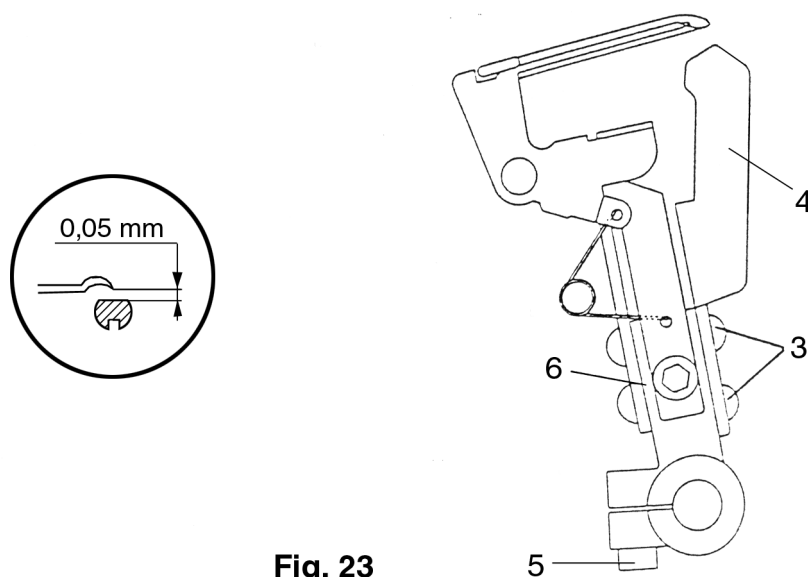


Fig. 23

13. Setting the lateral clearance to the left needle

Requirement:

When the lower overedge looper 2 is at its left point of reversal, the gap to the needle "R1" must be 2.8 - 3.1 mm (fig. 24).

Check:

- Turn the handwheel in the normal direction until the looper is at its left point of reversal.
- Check the clearance using the adjustment gauge (measurement D).

Note:

The looper-to-needle clearance can be offset when the screw 5 is loosened. For this reason the screw 5 may only be loosened slightly.

Setting:

- Turn the handwheel in the normal direction until the looper is at its left point of reversal.
- Slightly loosen screw 5 on looper lever 6.
- Set the lateral clearance of 2.8 mm by moving the looper lever 6.
- Tighten screw 5.

Test:

- As described under "Check".
- After having set the lateral clearance, the looper-to-needle clearance must be reset and/or controlled as described in section 12 of the adjustment and repair instructions.

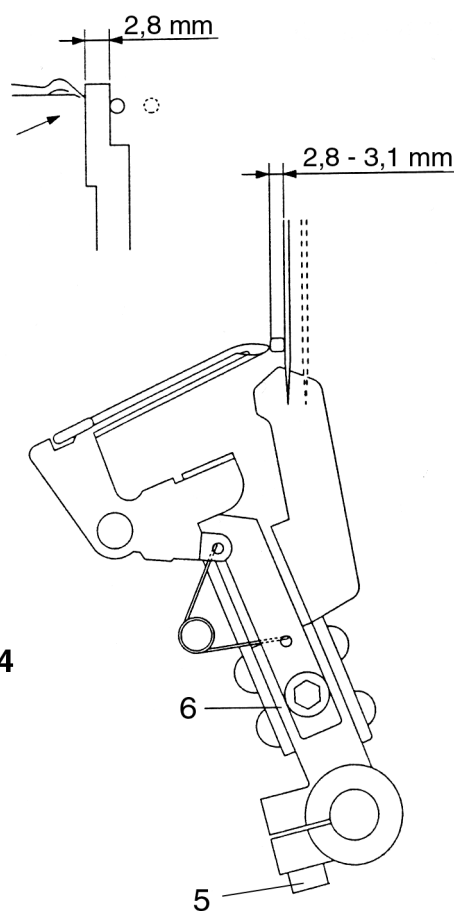


Fig. 24

Setting the upper overedge looper

14. Setting the lateral clearance to the left needle

Requirement:

When the upper overedge looper is at its left point of reversal, the clearance of looper point to the left needle must be 5.5 - 6.0 mm (fig. 25).

Note:

The rock shaft and its guide bushes must not have any axial play.

Check:

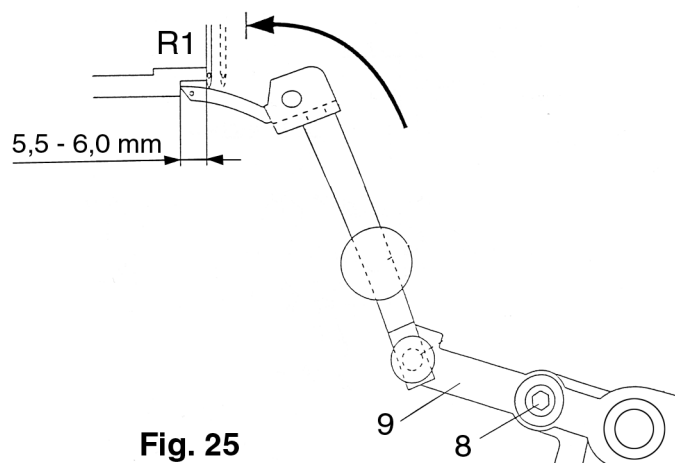
- Turn the handwheel in the normal direction until the upper looper is at its left point of reversal.
- Check the clearance using the adjustment gauge (measurement C).

Setting:

- Turn the handwheel in the normal direction until the upper looper is at its left point of reversal.
- Slightly loosen fastening screw 8.
- Move the looper drive arm 9 until the clearance between the looper point and the left needle is 5.5 - 6.0 mm.
- Tighten fastening screw 8.

Test:

- As described under "Requirement".
- Check that the machine runs freely.



15. Setting the timing of the upper overedge looper

Requirement:

When the two loopers overlap, as shown in figure 26, the clearance between the point of the upper looper 10 and the head of the lower looper 2 must be between 0.5 and 1.0 mm.

Check:

- Turn the handwheel in the normal direction until the upper looper 10, in its upward movement, is behind the lower looper 2.
- Check that the clearance between the point of the upper looper 10 and the head of the lower looper 2 is between 0.5 and 1.0 mm.

Setting:

- Turn the handwheel in the normal direction until the upper looper 10, in its upward movement, is behind the lower looper 2.
- Loosen the screws 11 on the drive eccentric 4 (fig. 27).
- Rotate the drive eccentric until the clearance between the point of the upper looper 10 and the head of the lower looper 2 is between 0.5 and 1.0 mm (figure 26).
- Tighten the screws 11 of the drive eccentric (fig. 27).

Test:

- As described under "Requirement".

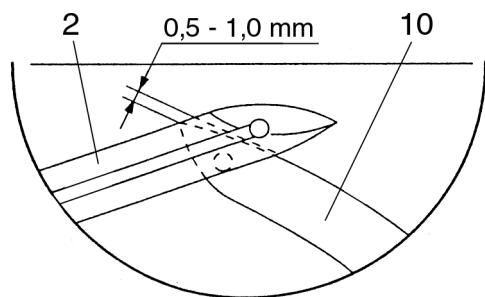


Fig. 26

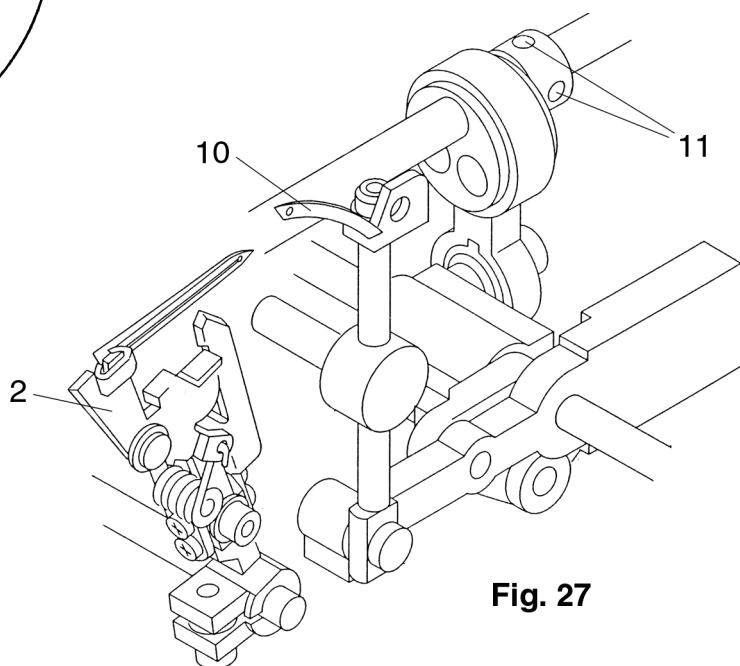


Fig. 27

16. Setting the clearance between the upper and lower overedge loopers

Requirement:

When the two loopers overlap (fig. 28), the clearance between the point of the upper looper 10 and the back of the lower looper 2 must be between 0.05 and 0.2 mm.

Check:

- Turn the handwheel in the normal direction until the upper looper 10, in its upward movement, is behind the lower looper 2.
- Check that the clearance between the point of the upper looper 10 and the back of the lower looper 2 is between 0.05 and 0.2 mm.

Setting:

- Turn the handwheel in the normal direction until the upper looper 10, in its upward movement, is behind the lower looper 2.
- Slightly loosen the screw 12 (fig. 29).
- Pull the upper looper 10 forward until the clearance between the point of the upper looper and the back of the lower looper is between 0.05 and 0.2 mm (fig. 28).
- Tighten the screw 12.

Test:

- As described under "Requirement".

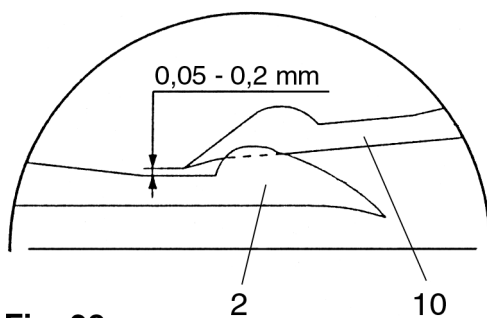


Fig. 28

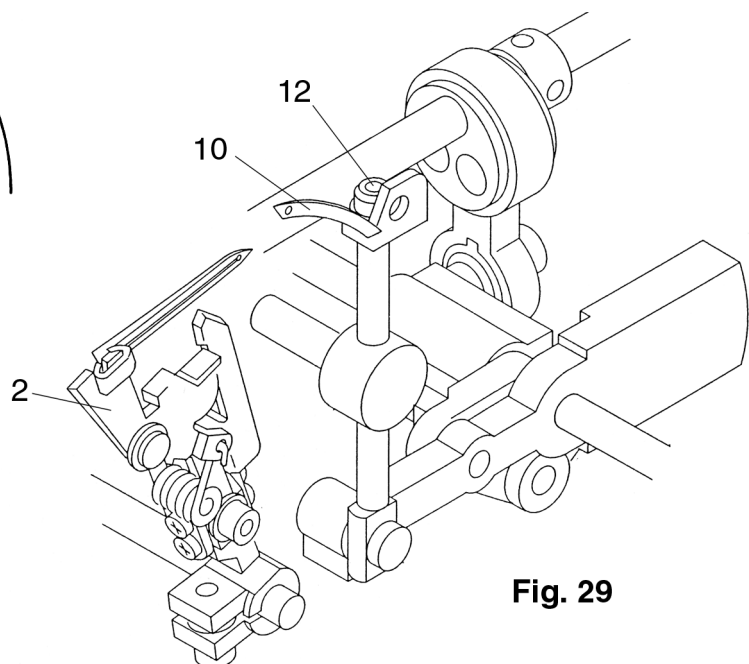


Fig. 29

Setting the two thread chainstitch looper

17. Setting the lateral clearance to the two thread chainstitch needle "L2"

Requirement:

When the two thread chainstitch looper 13 is at its right point of reversal, it should have a clearance of 1.6 mm to the needle "L2" (fig. 30).

Check:

- Turn the handwheel in the normal direction until the two thread chainstitch looper 13 is at its right point of reversal.
- Check the clearance using the adjustment gauge (measurement F).

Setting:

- Turn the handwheel in the normal direction until the two thread chainstitch looper 13 is at its right point of reversal.
- Loosen the screw 14.
- Set the clearance of 1.6 mm using the adjustment gauge (measurement F).
- Turn the screw 14 slightly.

Test:

- As described under "Requirement".

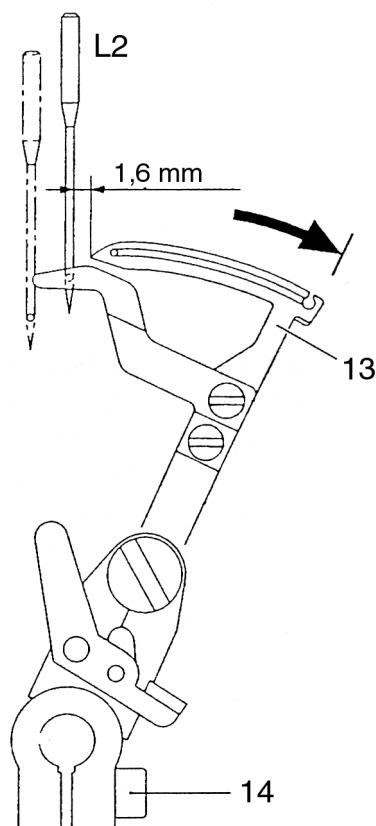


Fig. 30

18. Setting the looper-to-needle clearance

Requirement:

When the looper point is in the scarf of the needle "L1" while moving to the left, the looper-to-needle clearance must be 0.05 – 0.1 mm (fig. 31).

Check:

- Turn the handwheel in the normal direction until the looper point of the two thread chainstitch looper 13 is exactly in the scarf of the needle "L0" while moving to the left.
- Check the clearance between the looper point and the needle.

Setting:

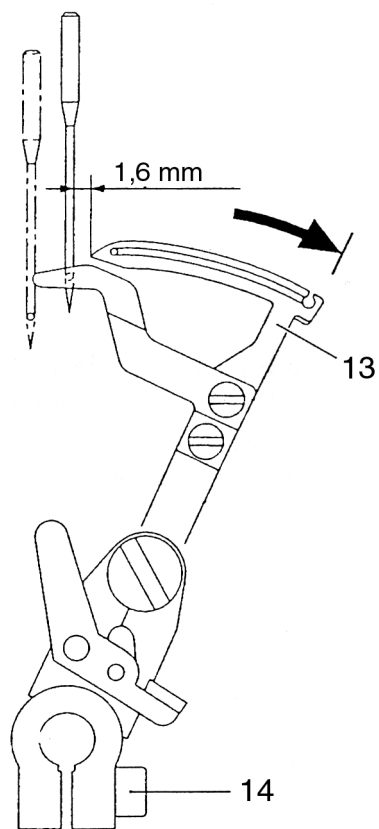
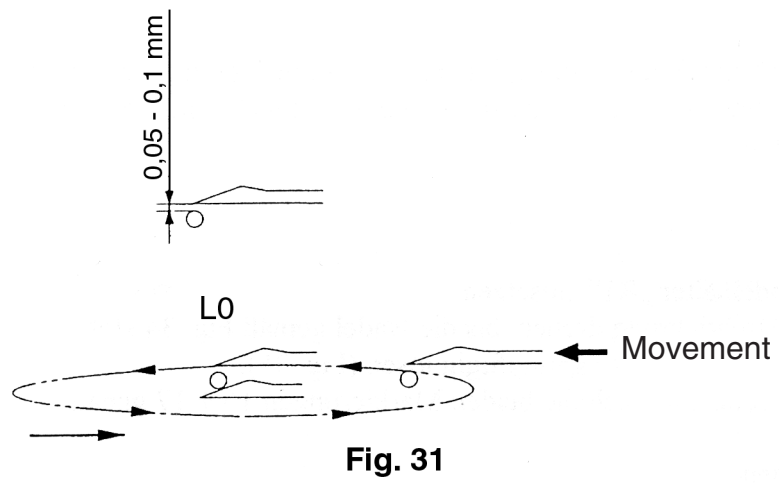
- Turn the handwheel in the normal direction until the looper point of the two thread chainstitch looper 13, while moving to the left, is exactly in the scarf of the needle "L0".
- Slightly loosen the screw 14 on the looper lever (fig. 32).
- Set the looper-to-needle clearance by pushing the looper lever.
- Tighten the screw 14 on the looper lever.

Test:

- As described under "Requirement".
- The lateral clearance of the two thread chainstitch looper to the needle must be checked or reset as described in section 17 in the adjustment and repair instructions after having set the looper-to-needle clearance.

Note:

The needle will be slightly depressed when it picks up the looper thread.



19. Setting the ellipsoidal movement

Requirement:

When the needle bar is at its lowest position, the two thread chainstitch looper must be at its right point of reversal, when moving to the right (fig. 33).

Note:

This adjustment must only be carried out if a compelling reason exists.

Check:

- Turn the handwheel in the normal direction until the two thread chainstitch looper is at its right point of reversal when moving to the right.
- Carry out a visual check.

Setting:

- Insert a new needle in the needle holder "R1".
- Turn the handwheel in the normal direction until the needle is positioned as in fig. 34.
- Slightly loosen the screws 15 on the drive eccentric (fig. 35).
- Move the drive eccentric until the markings 16 and 17 are exactly opposite one another.
- Tighten the screws 15.

Test:

- As described under "Requirement".

Note:

Should the loops of the two thread chainstitch needle not be correctly formed, the drive eccentric must be moved and set as in fig. 36.

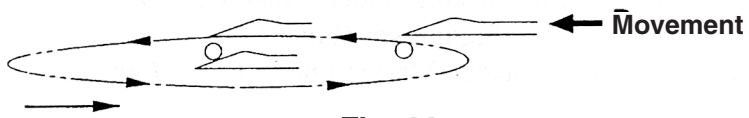


Fig. 33

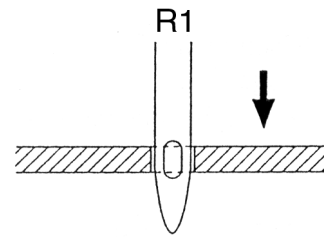


Fig. 34

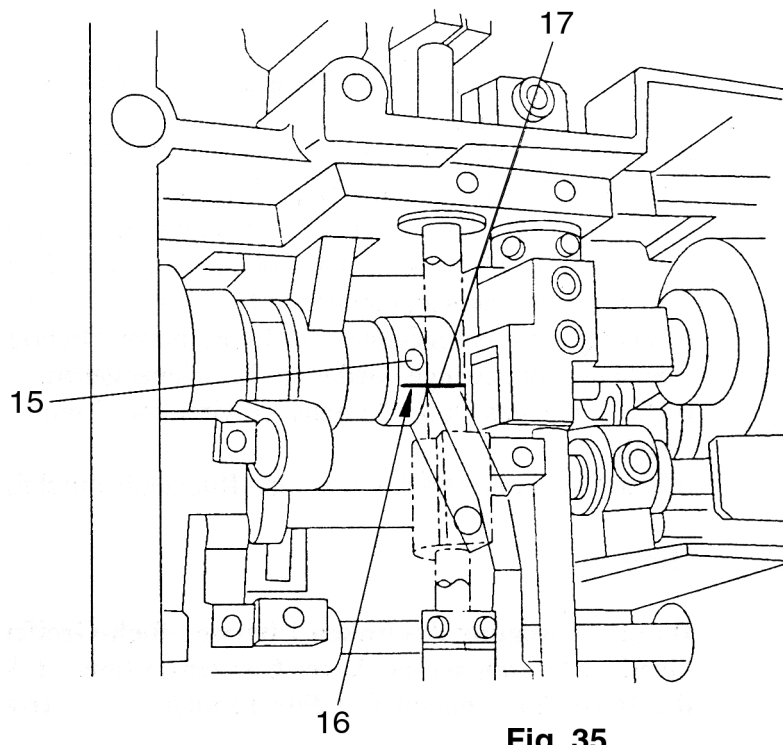


Fig. 35

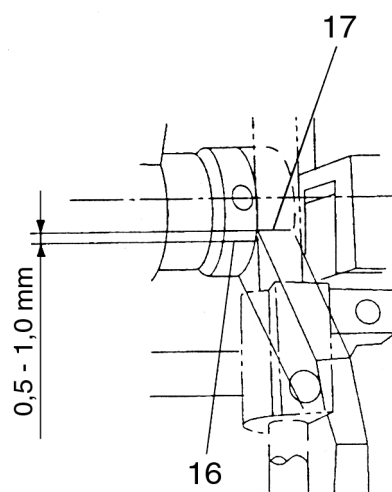


Fig. 36

20. Setting the timing of the two thread chainstitch looper

Requirement:

When the two thread chainstitch looper 13 moves from its left point of reversal to the right and the looper eye has reached the needle center line "L0", the needle and looper eye should be flush (fig. 37).

Check:

- Turn the handwheel in the normal direction until the needle bar is in its lowest position.
- Push the needle bar clamp (00-870 137-01) over the needle bar.
- Turn the handwheel in the normal direction until the point of the two thread chainstitch looper 13 is at the exact middle of the needle "L0".
- Push the needle bar clamp up against the machine's housing and slightly turn the knurled screw (fig. 38).
- Turn the handwheel in the opposite direction until the needle bar clamp rests up against the machine's housing once again.
- The point of the two thread chainstitch looper 13 must be positioned at the middle of needle "L0".
- Carry out a visual check of the forward and backward movement.

Note:

Since the movement of the lower overedge looper 2 and two thread chainstitch looper 13 is controlled by the same drive eccentric, the timing of the two thread chainstitch looper 13 can not be set at the drive eccentric.

If the movement has not been set correctly, the timing of the lower overedge looper must be checked and/or reset as described under section 11 of the adjustment and repair instructions!

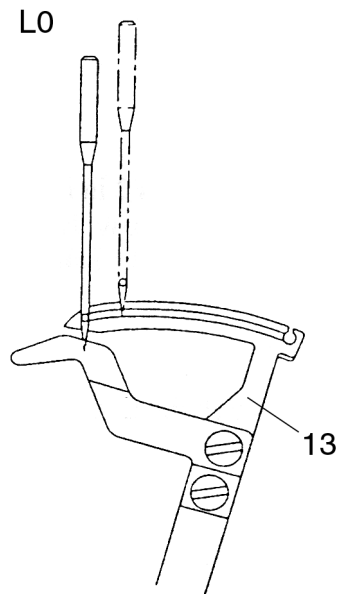


Fig. 37

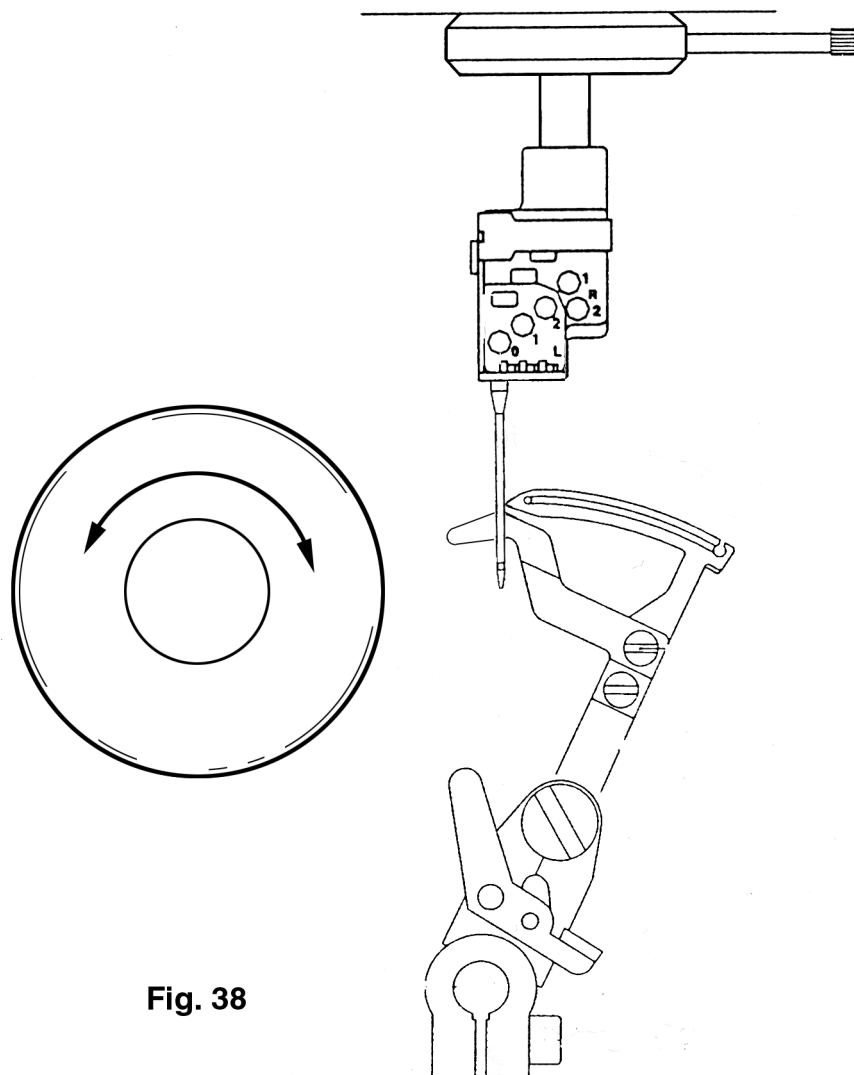


Fig. 38

Setting the needle guards

21. Setting the rear needle guard

When the looper point of the lower overedge looper 2 is exactly at the center line of either needle "R1" or needle "R2" when moving to the right, the needles should have a clearance of 0 - 0.05 mm to the needle guard 18 (fig. 39).

Check:

- Turn the handwheel in the normal direction until the looper point, when moving to the right, is precisely behind either needle "R1" or "R2".
- Check the distance.

Setting:

- Turn the handwheel in the normal direction until the looper point, when moving to the right, is precisely behind either needle "R1" or "R2".
- Slightly loosen the screws 19.
- Push the rear needle guard 18 so that the clearance, as seen in fig. 39, is set.
- Tighten the screws 19.

Test:

- As described under "Requirement".

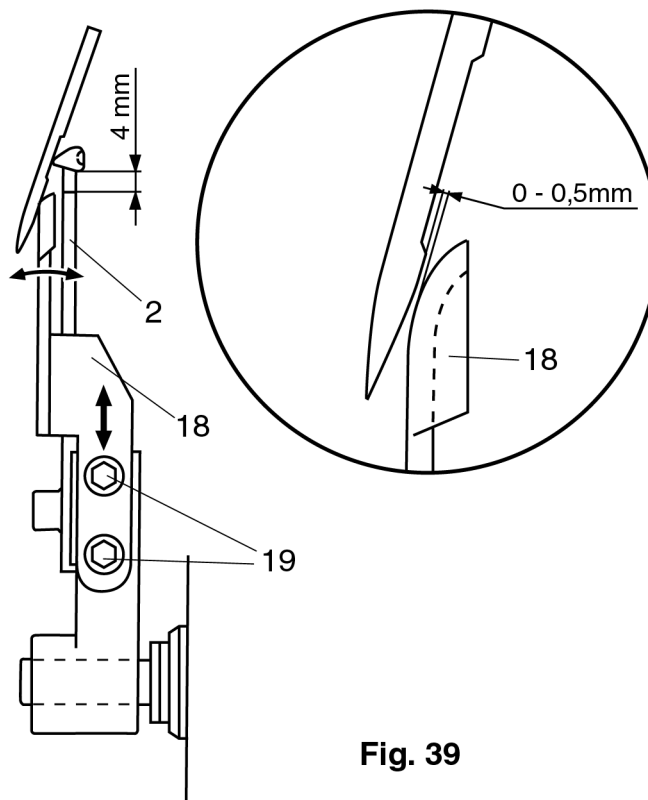


Fig. 39

22. Setting the needle guard for the cover stitch needles

Requirement:

When the looper point of the two thread chainstitch looper 13 is exactly at the needle center line of either the needle "L0" or "L2" when moving to the left, the needle should have a clearance of 0 - 0.05 mm to the front needle guard 20 (fig. 40).

Check:

- Turn the handwheel in the normal direction until the looper point of the two thread chainstitch looper 13 is precisely in the middle of the needle center line of either the needle "L0" or "L2".
- Carry out a visual check.

Setting:

- Slightly loosen the fastening screw 21 (fig. 41).
- Push the front needle guard 20 until there is a clearance of 1.0 mm between the two thread chainstitch looper 13 and the front needle guard 20.
- Tighten the fastening screw 21.
- Turn the adjusting screw 22 until the clearance of 0 - 0.05 mm is set, as seen in figure 40.

Test:

- As described under "Requirement".

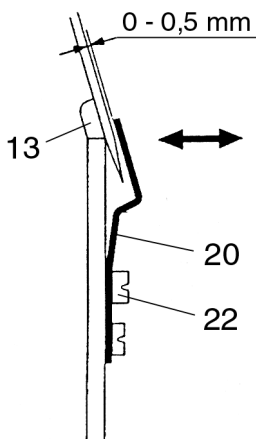


Fig. 40

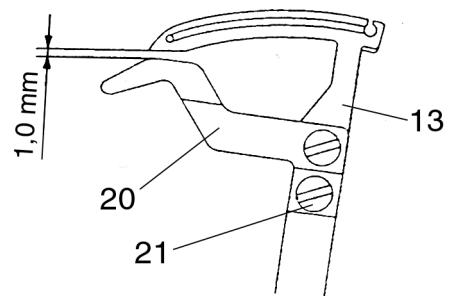


Fig. 41

Setting the upper blade

23. Setting the upper blade

Requirement:

When the upper blade 23 is at its lowest position, the upper and lower blades must overlap by 0.5 mm (fig. 42).

Check:

- Turn the handwheel in the normal direction until the upper blade 23 is at its lowest position.
- Check the overlapping of the upper and lower blade.

Setting:

- Turn the handwheel in the normal direction until the upper blade 23 is at its lowest position.
- Loosen the screw 24.
- Set the overlap of the upper and lower blades by moving the upper blade 23.
- Tighten the screw 24.

Test:

- As described under "Check".

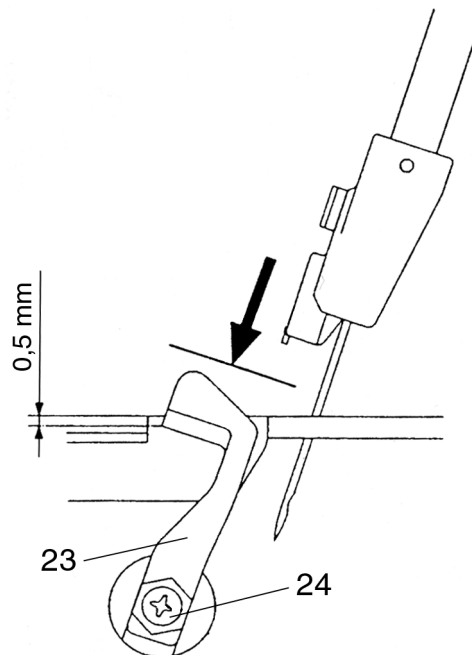


Fig. 42

24. Setting the lower blade bracket and the seam width adjusting knob

Requirement:

When the seam width adjusting knob 25 is set at the lowest number (fig. 43), the lower blade must have a clearance of 0.2 - 0.3 mm to the needle plate. The knob 26 of the upper blade must also have a clearance of 0.1 - 0.2 mm to the holder 27 (fig. 44).

Check:

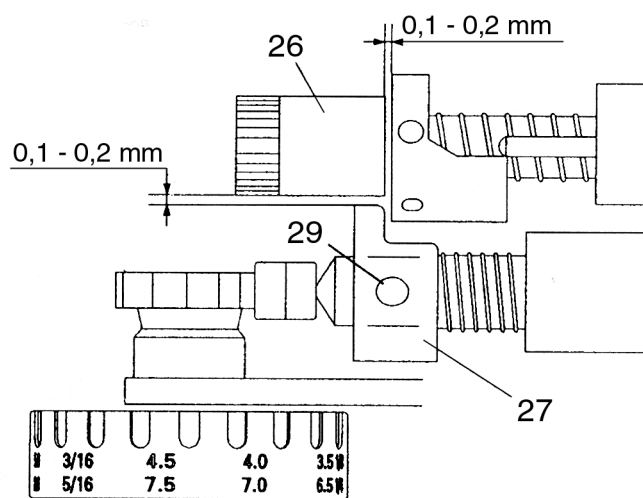
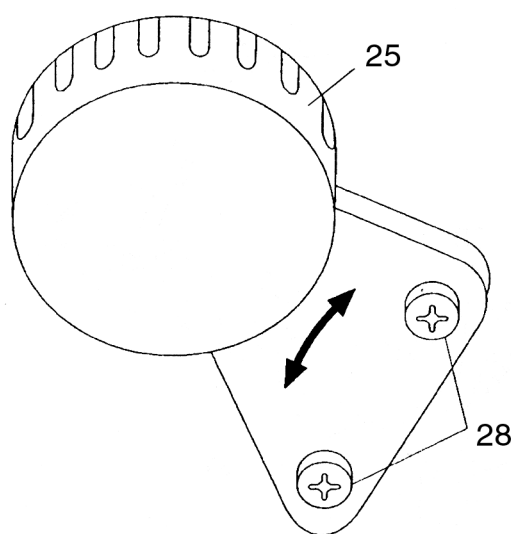
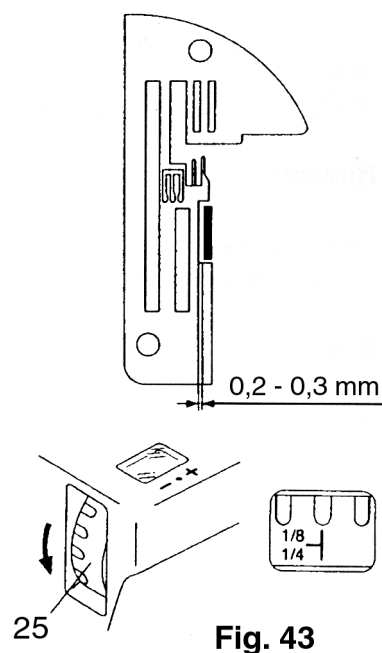
- Set the seam width adjusting knob 25 to the narrowest seam width.
- Carry out a visual check (fig. 43).

Setting:

- Set the seam width adjusting knob 25 to the narrowest seam width.
- Loosen the fastening screws 28.
- Push the complete seam width adjusting knob 25 so that a clearance of 0.2 - 0.3 mm to the needle plate is set.
- Tighten the fastening screws 28.
- Loosen the fastening screw 29 (fig. 44).
- Push the holder 27 toward the front until the holder 27 has a clearance of 0.1 - 0.2 mm to the knob 26 of the upper blade.
- Tighten the fastening screw 29.

Test:

- As described under "Check".



25. Setting the chaining finger

Requirement:

The chaining finger 29 must be parallel to the needle plate and its foremost point protrudes 0.5 - 1.0 mm over the needle plate finger (fig. 45).

Check:

- Carry out a visual check.

Setting:

- Slightly loosen the fastening screws 30 (fig. 46).
- Push the chaining finger back and forth until the setting is as in fig. 45.
- Tighten the fastening screws 30.
- Loosen the fastening screws 32.
- Adjust the chaining finger bracket 31 so that it rests perfectly on the needle plate.
- Tighten the fastening screws 32.

Note:

Check the automatic return of the chaining finger.
The chaining finger must not rub against the movable blades.

Test:

- As described under "Check".

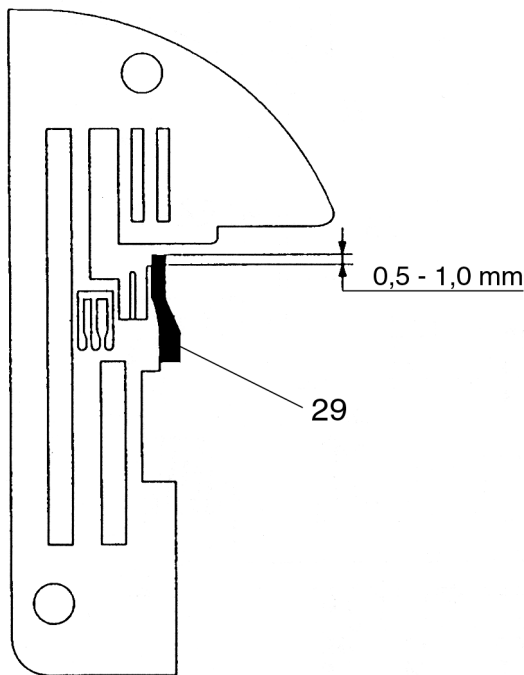


Fig. 45

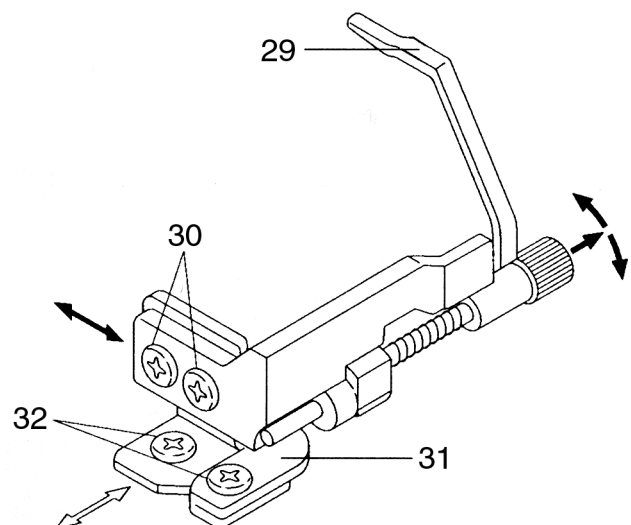


Fig. 46

Setting the looper thread guides

26. Setting the looper thread guide of the lower and upper overedge loopers

Requirement:

When the looper thread guide 33 is at its highest position, it must have a clearance of 47.3 mm to the bedplate (fig. 47).

Check:

- Turn the handwheel in the normal direction until the looper thread guide 33 is at its highest position.
- Mount the adjustment gauge.
- Carry out a visual check.

Setting:

- Turn the handwheel in the normal direction until the looper thread guide 33 is at its highest position.
- Loosen the screw 34.
- Move the looper thread guide 33 until the clearance of 47.3 mm is set.
- Tighten the screw 34.

Test:

- As described under "Requirement".
- The lateral clearance of the looper thread guide 33 to the housing should be 5.0 mm

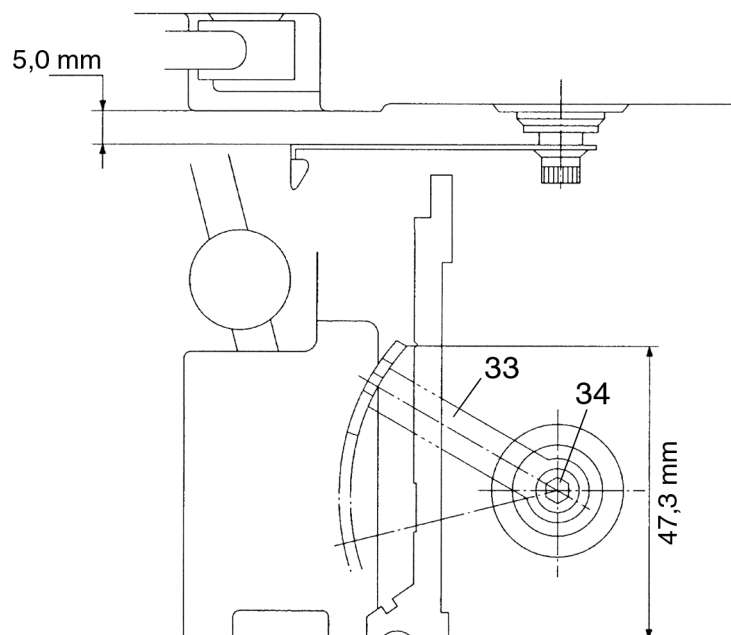


Fig. 47

27. Setting the looper thread guide of the two thread chainstitch looper

Requirement:

When the looper thread guide 35 is at its highest position, the needle in its downward movement must be positioned as shown in fig. 48.

The looper thread guide 35 must also be set so that the upper and lower clearance of the looper thread guide 35 to the aperture on the housing are equal (fig. 49).

Setting:

- Loosen the screws 37.
- Push the looper thread guide until the looper thread guide is set as shown in fig. 49.
- Tighten the screws 37.
- Slightly loosen the screws 38 on the drive eccentric (fig. 50).
- Turn the handwheel in the normal direction until the needle is positioned as shown in fig. 48.
- Twist the drive eccentric until the looper thread guide 35 is at its highest position.
- Tighten the screws 38.

Note:

When the two thread chainstitch looper's stitch formation is either too tight or too loose (fig. 51 + 52), this can be corrected within the tolerance of the needle eye as in fig. 48.

Do not tighten the screws 38 too tightly, because the plastic cam could break.

Test:

- As described under "Requirement".

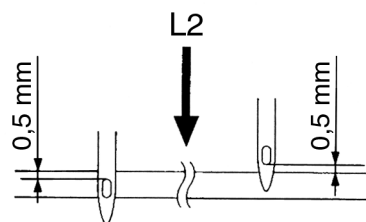
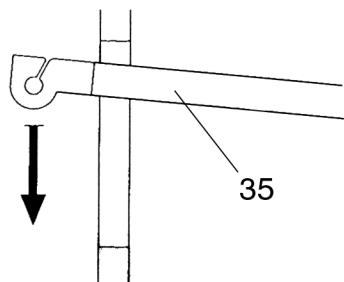


Fig. 48

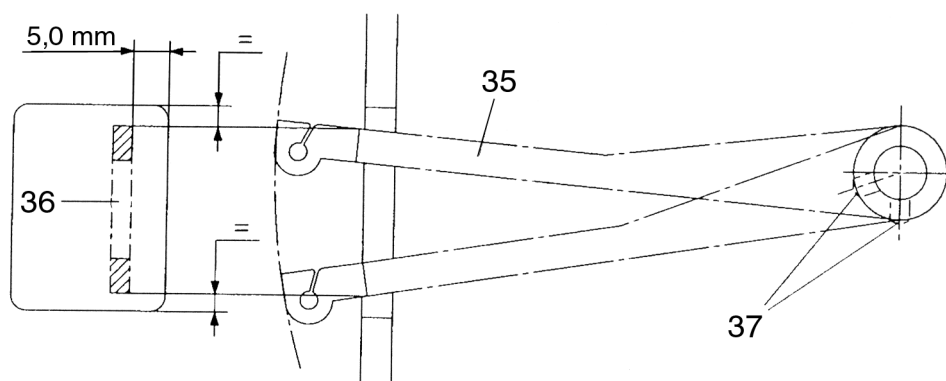


Fig. 49

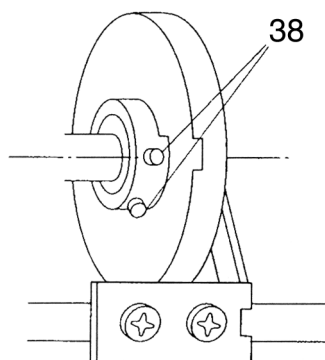


Fig. 50

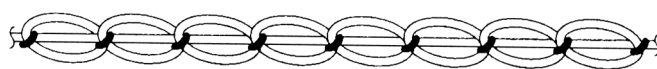


Fig. 51



Fig. 52

LCD test mode, setting the thread tension and the synchronizer

28. LCD test mode

The test is carried out in a set sequence, which can not be changed.

The program can be terminated by turning off the machine.

1. LCD test (visual check of the display)
2. Test and setting the thread tensions

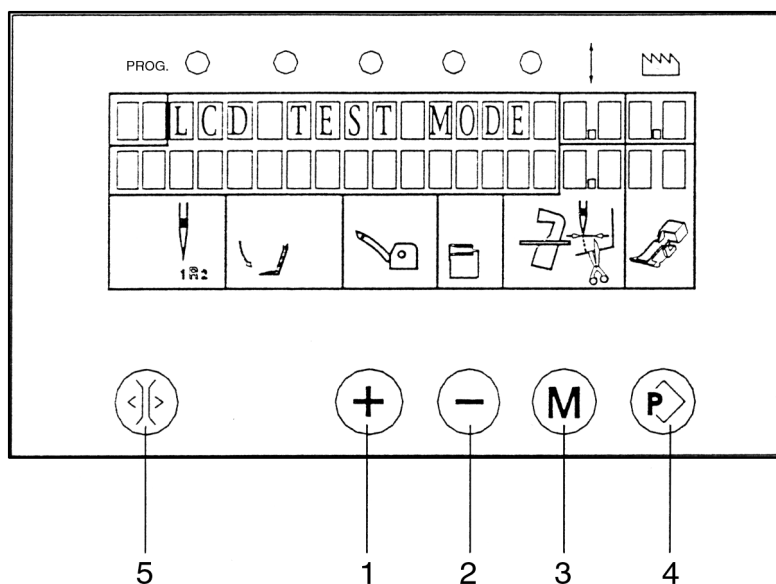


Fig. 53

Test sequence:

Turn off the master switch.

Press the keys "2" and "3" (fig. 53) and at the same time turn the master switch on.
The display as seen in fig. 54 will appear on the LCD.

LCD check:

Carry out a visual check for missing or incorrect symbols.

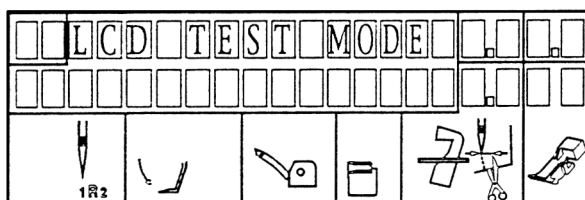


Fig. 54

Press key “1”; the stepping motors turn and go to their minimum position.
The numbers “12” appear on the LCD (fig. 55).

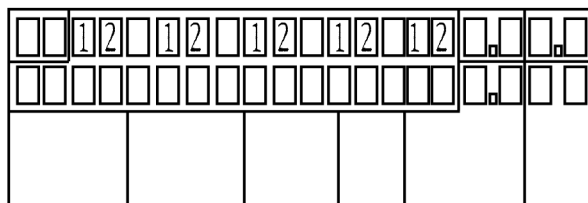


Fig. 55

Thread tension values' check:

Check the thread tension values, which should be between 5 and 10 grams, using cotton thread size 50 (three-cord), as depicted in fig. 56.

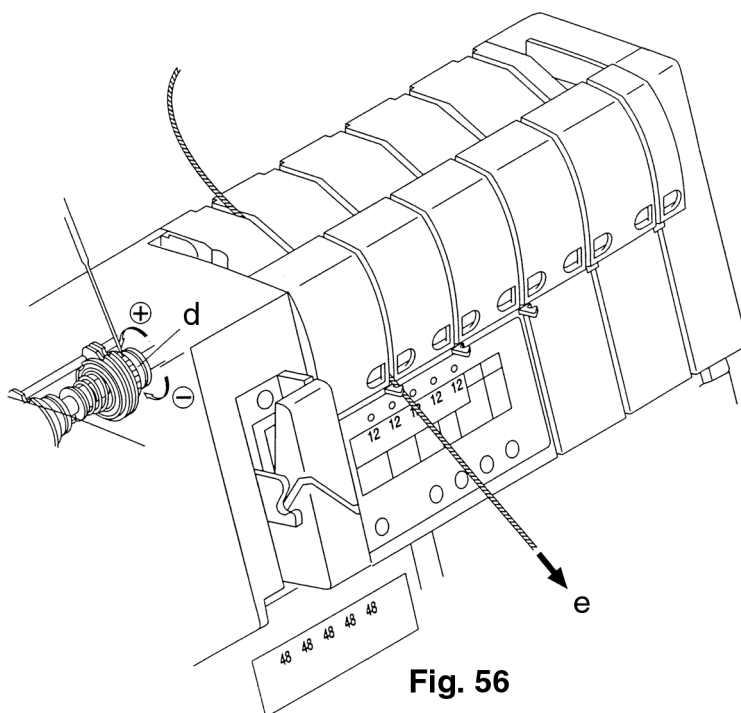


Fig. 56

Press key “1” once again; the stepping motors turn and go to their maximum position.
The numbers “48” appear on the LCD (fig. 57).

Thread tension values' check:

Check the thread tension values, which should be between 40 and 50 grams, using cotton thread size 50 (three cord), as depicted in fig. 56.

When the thread tension is not set correctly, turn the knurled nut using a needle Nm 90 until the setting is correct. The housing must not be removed to do this.

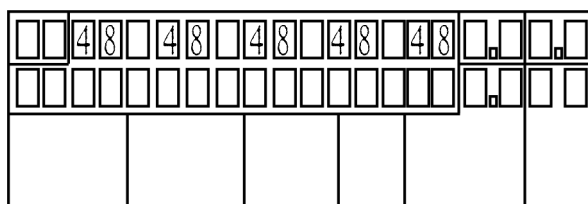


Fig. 57

Press the key “1” once again.
The display as seen in fig. 58 appears on the LCD.

LCD check:
Carry out a visual check for missing or incorrect symbols.

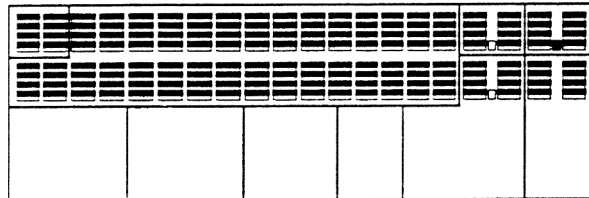


Fig. 58

Press the key “1” once again.
The display as seen in fig. 59 appears on the LCD.

LCD check:
Carry out a visual check for missing or incorrect symbols.

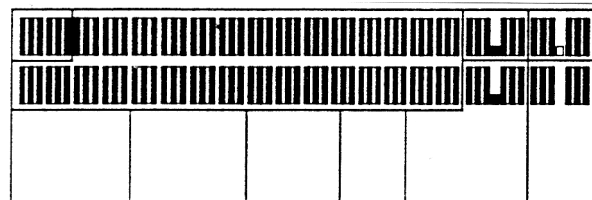


Fig. 59

Press the key “1” once again.
The display as seen in fig. 60 appears on the LCD.

LCD check:
Carry out a visual check for missing or incorrect symbols.

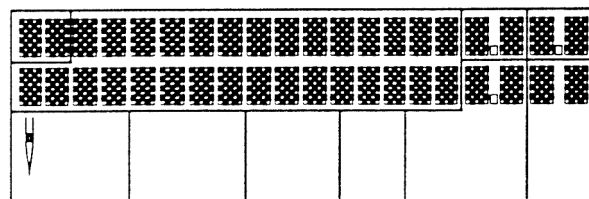


Fig. 60

Press the key “1” once again.
The display as seen in fig. 61 appears on the LCD.

LCD check:
Carry out a visual check for missing or incorrect symbols.

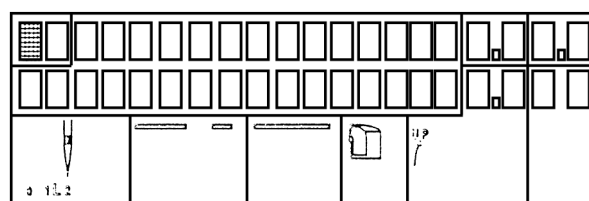


Fig. 61

Press the key “1” once again.
The display as seen in fig. 62 appears on the LCD.

LCD check:
Carry out a visual check for missing or incorrect symbols.

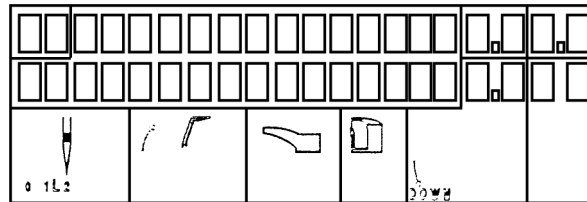


Fig. 62

Press the key “1” once again.
The display as seen in fig. 63 appears on the LCD.

LCD check:
Carry out a visual check for missing or incorrect symbols.

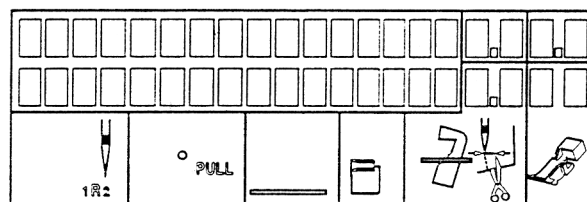


Fig. 63

Press the key “1” once again.
No display will appear on the LCD (fig. 64).

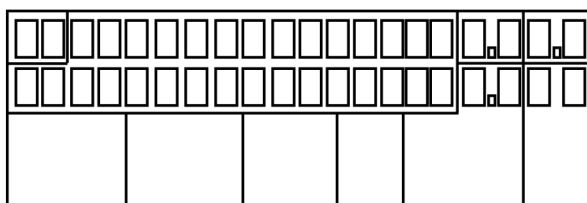


Fig. 64

Press the key “1” once again.
The display as seen in fig. 65 appears on the LCD.

LCD check:
Carry out a visual check for missing or incorrect symbols.

Note:
This test can be carried out in reverse order: simply press the key “2” to do so.

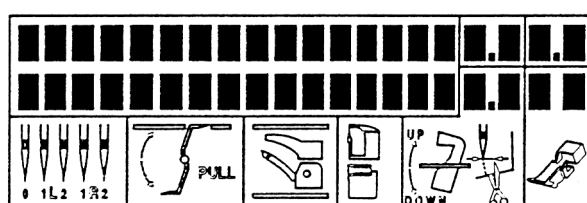


Fig. 65

29. Setting the synchronizer

Requirement:

If the foot control is released, the needle bar must stop at its highest position and the upper overedge looper must have a clearance of 3.0 - 5.0 mm to the needle "R2" (fig. 66).

Check:

- Switch on the machine.
- Press the foot control for a short period of time.
- Release the foot control.
- Carry out a visual check.

Setting:

- Remove the stand cover as described in the adjustment and repair instructions.
- Press the foot control for a short period of time.
- Release the foot control.
- Turn the hand wheel in the normal direction and set the clearance of 3.0 - 5.0 mm between the needle "R2" and the upper overedge looper.
- Loosen the fastening screw 39 (fig. 66).
- Set the washer 40 as shown in fig. 66.
- Tighten the fastening screw slightly.
- Check the setting of the needle bar and the upper overedge looper.
- Keep repeating this procedure until the setting is correct (as seen in fig. 66).
- Tighten the fastening screw 39.

Test:

- As described under "Requirement".
- Mount the stand cover as described in the adjustment and repair instructions.

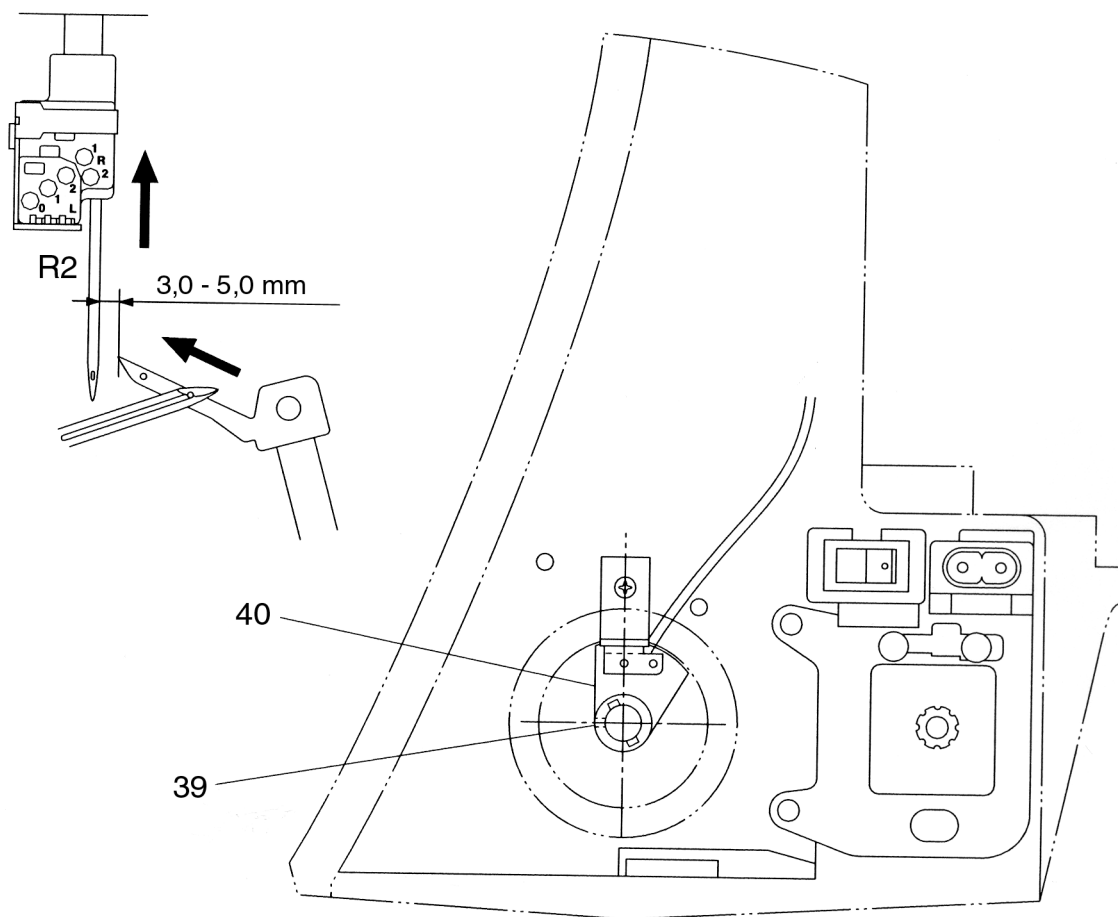


Fig. 66

30. Setting the background lighting

Note:

This adjustment must only be carried out if a compelling reason exists.

Check:

- Connect lead cord to the connecting bush of the coverlock and to the wall outlet.
- Activate the master switch.
- Carry out a visual check.

Setting:

- Pull the lead cord from the wall outlet.
- Remove the front housing cover as described in the adjustment and repair instructions.
- Plug the lead cord into the wall outlet.
- Do not make any changes to the electrical connections.
- Using a small, narrow screw driver turn the potentiometer 41 slightly until the background lighting is set correctly (fig. 67).

Test:

- As described under "Check".

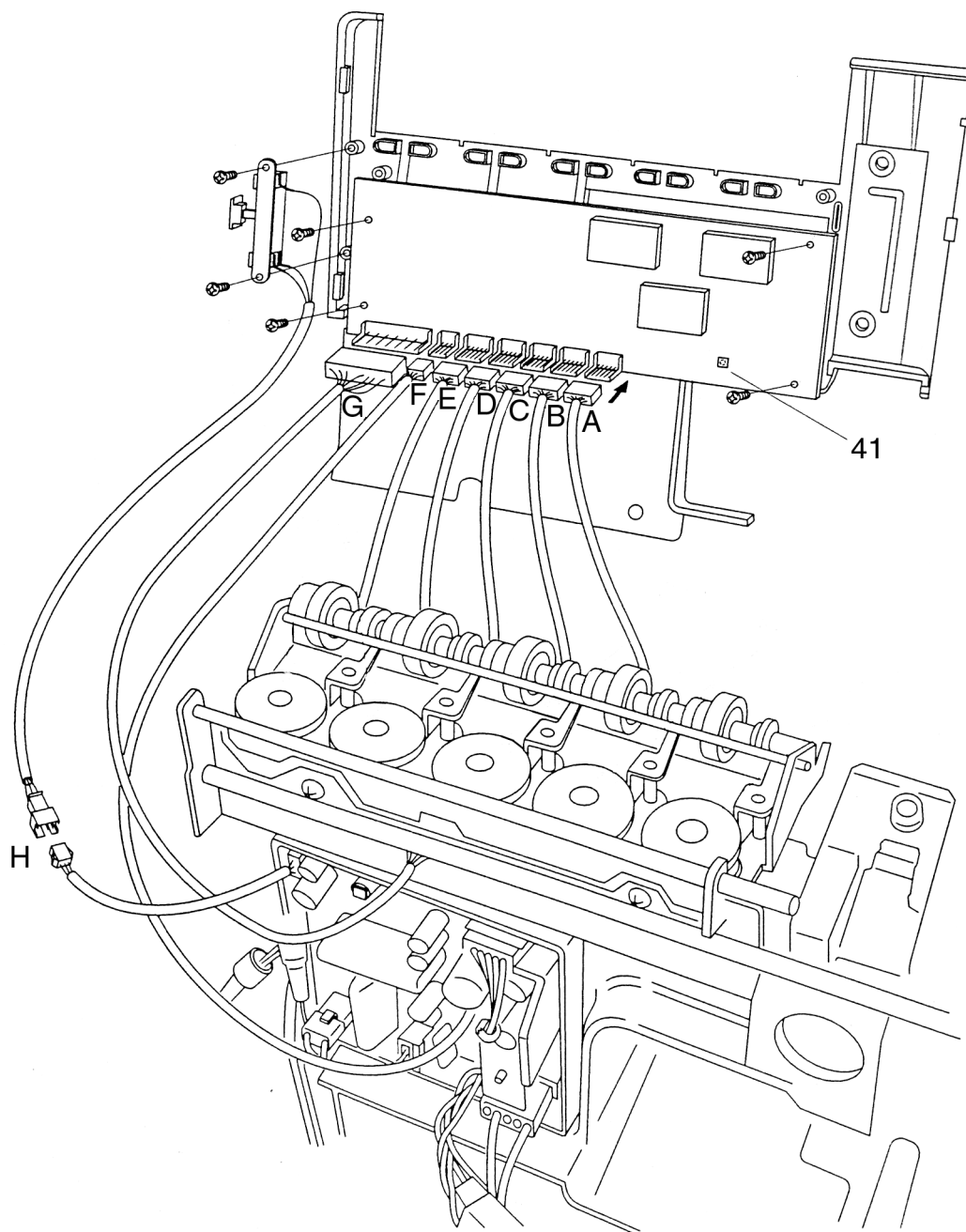


Fig. 67

Safety test

31. Microswitch functional test

A functional test of the microswitch is always to be carried out after any repairs.

- Connect the foot control.
- Turn on the master switch.
- Open the looper cover or the swivel plate (fig. 68).
- The electricity supply to the machine is interrupted.
- Activate the foot control.
- The machine must not run during this test.
- Close the looper cover/swivel plate.

Note:

When the looper cover/swivel plate is open, the machine must not start to run.

- When the looper cover or the swivel plate has been closed and the machine does not start to run, the contact pins must be checked.
- If necessary, the contact holder 42 can be pushed upward slightly until it functions perfectly (fig. 69).

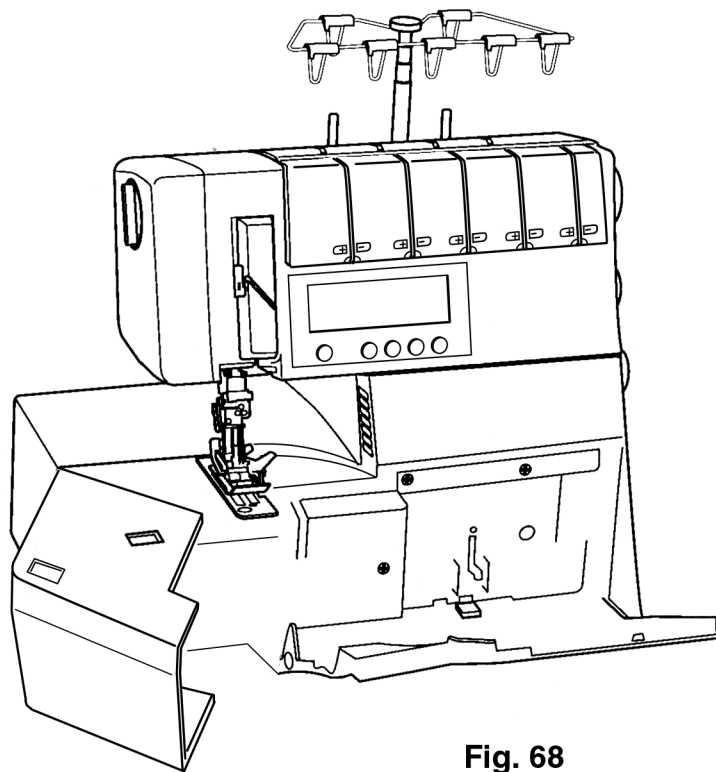


Fig. 68

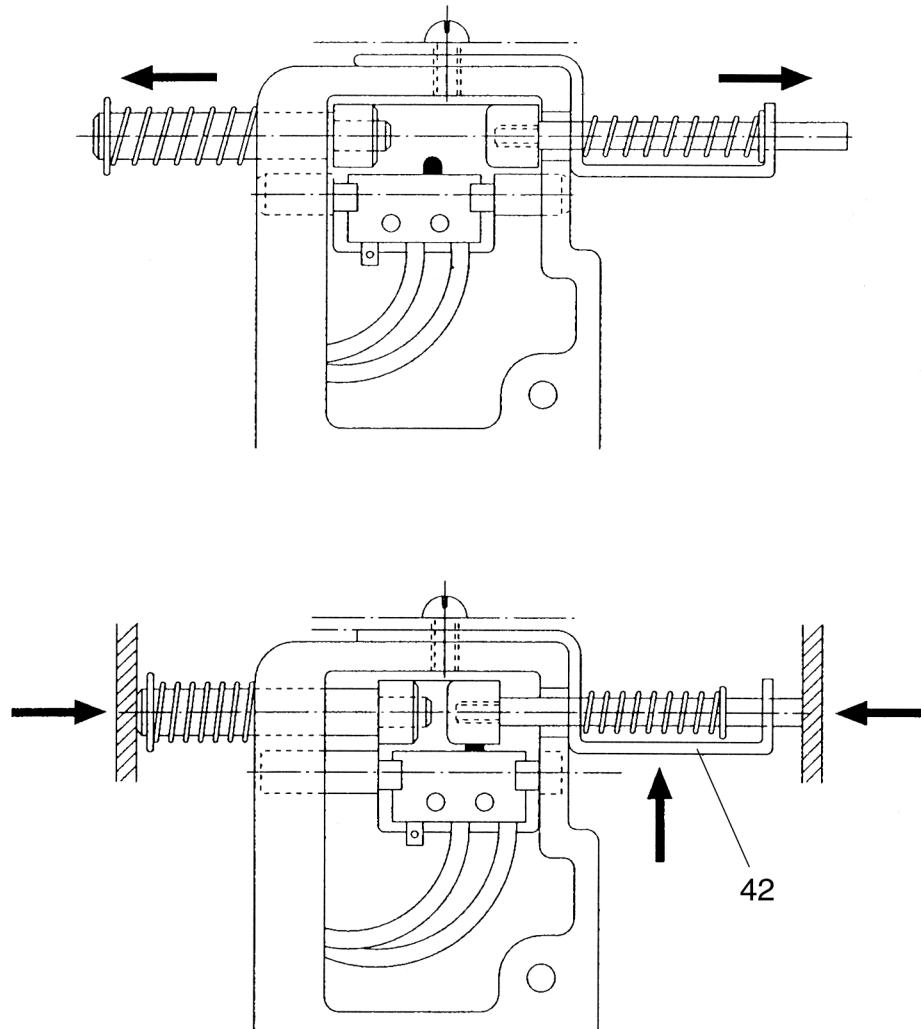


Fig. 69

32. Electrical safety test

According to the German law on safe machine operation from the 24th June 1986, the VDE regulations are regarded as the official rules in electronics and are the basis for the regulations for testing electrical safety of technical devices.

The required electrical tests are established in the regulations for repair, modification and testing of used electrical appliances (VDE 0701 edition 05.93) section 4.

We are obliged to perform a test in accordance with VDE 0701 on every electrical appliance after repair.

In European foreign countries, there are similar regulations in force which are largely identical with the requirements of the VDE 0701.

33. Electrical safety test with ABB Metrawatt M 5013

I) Mains voltage test: Volt = V

- For all following tests insert the plug of the ABB Metrawatt M 5013 in the grounded mains socket.
- Set the switch for the measuring range at "250 V" (figure 70). If there is mains voltage present, the LCD display shows how much (230 V +/- 10%).
- Touch the contact field, which is to the right and below the knob for the measuring range, with your finger, thus checking the ground lead of the mains. Signal lamp "PE" just above the contact field will light up only if the ground lead is out of order.
- Insert the plug of the sewing machine into the mains socket of the ABB Metrawatt M 5013.
- Run the machine.
- Meter reading: 230 V +/- 10%
- Measuring appliance M 5013 can only be used with mains voltages from 207 V to 253 V (230 V +/- 10%).

II) Appliance current test: Ampere = A

- The plug of the sewing machine remains in mains socket.
- Set the switch for the measuring range at 16 A (figure 71).
- Run the machine.
- Meter reading: 0.85 A maximum.

III) Insulation resistance: M Ohm = M

- Insert the plug of the sewing machine into the tester socket.
- Use the clamp to attach the test lead of testing appliance M 5013 to the presser bar.
- Set the switch for the measuring range at "20 M Ohm" (figure 72).
- Meter reading: minimum 2 M Ohm
- In the case of meter readings higher than 20 M Ohm, appliance M 5013 displays the digit 1! In these cases, the remark "Insulation resistance higher than 20 M Ohm" must be recorded in the testing report.

IV) Stray current: Milliampere = mA

- The sewing machine plug remains in the tester socket.
- Use the clamp to attach the test lead of testing appliance M 5013 to presser bar.
- Set the switch for the measuring range at "20 mA" (figure 73).
- Meter reading: maximum 0.25 mA.

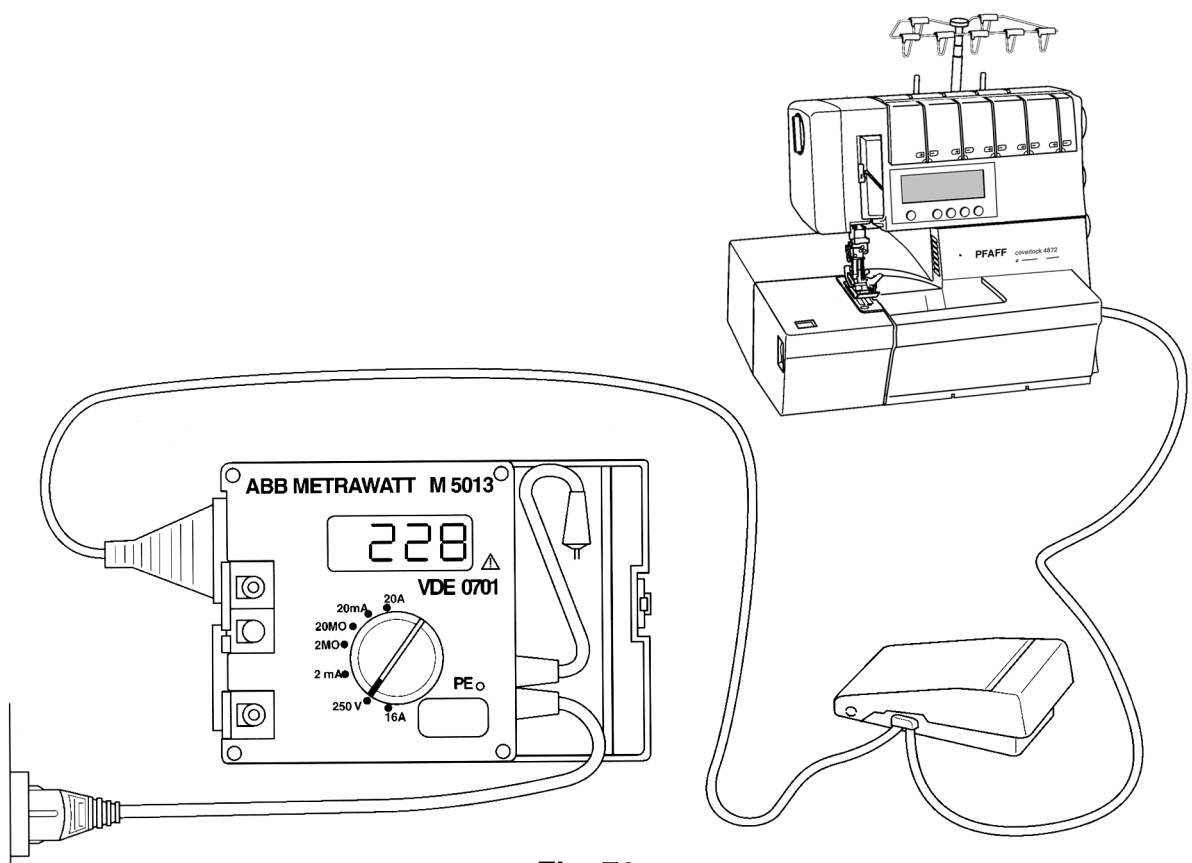


Fig. 70

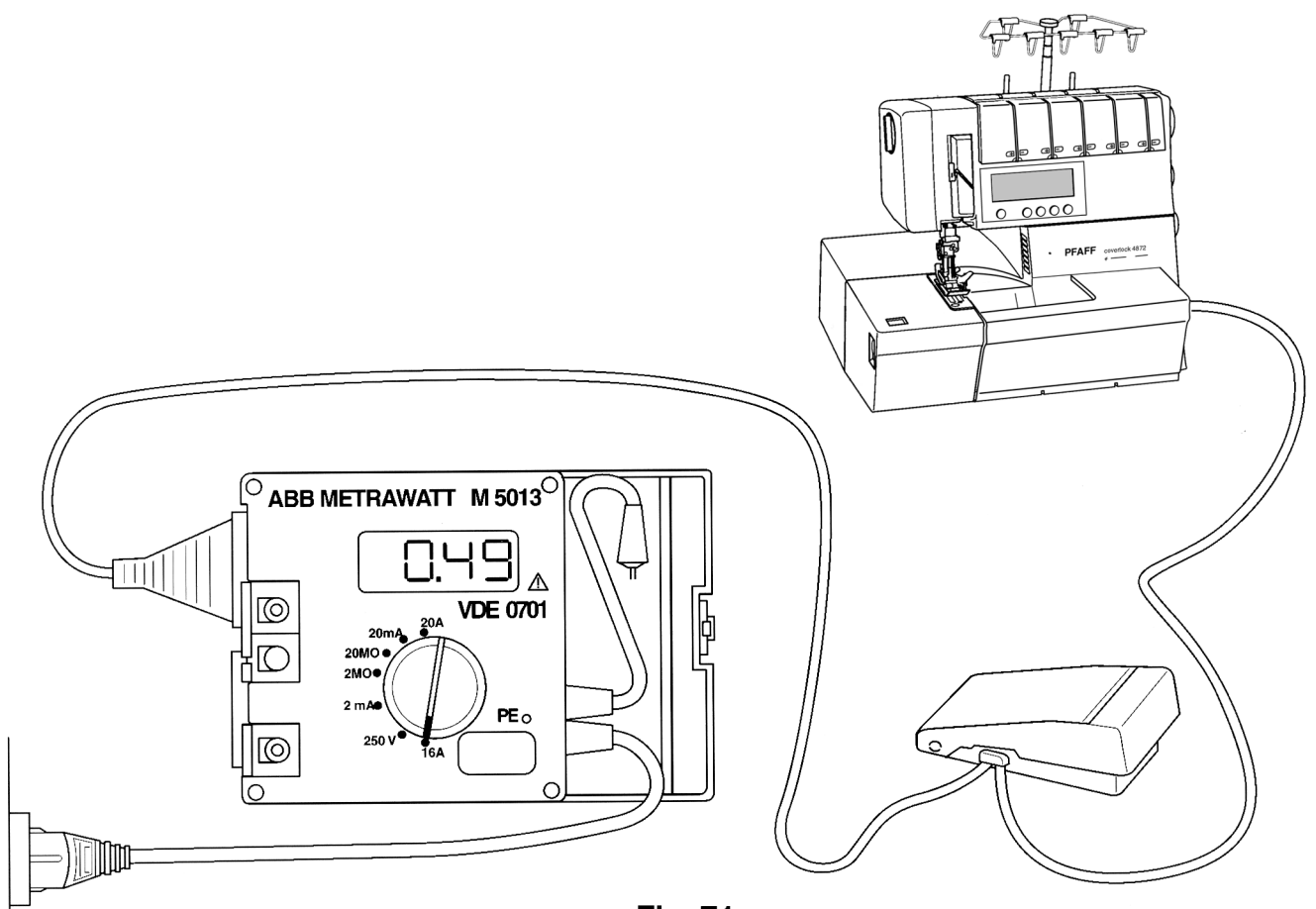


Fig. 71

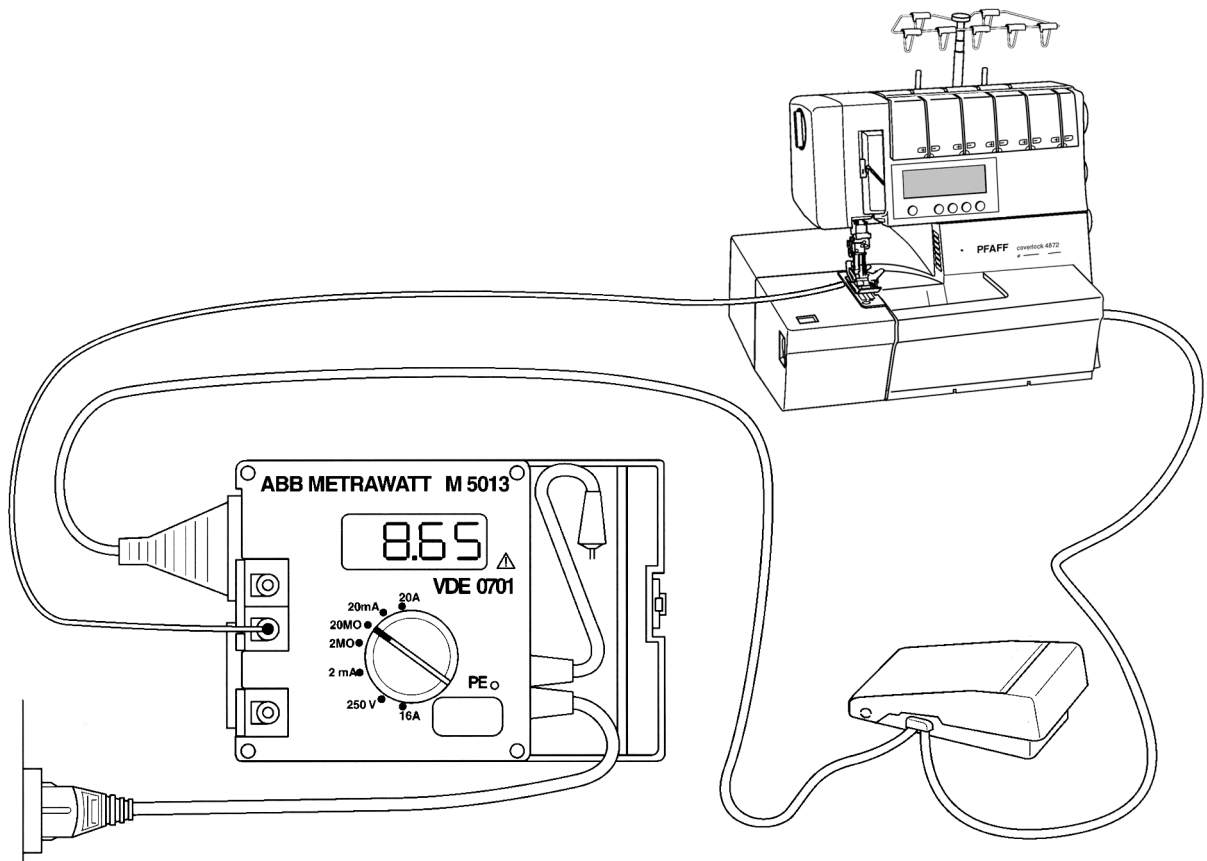


Fig. 72

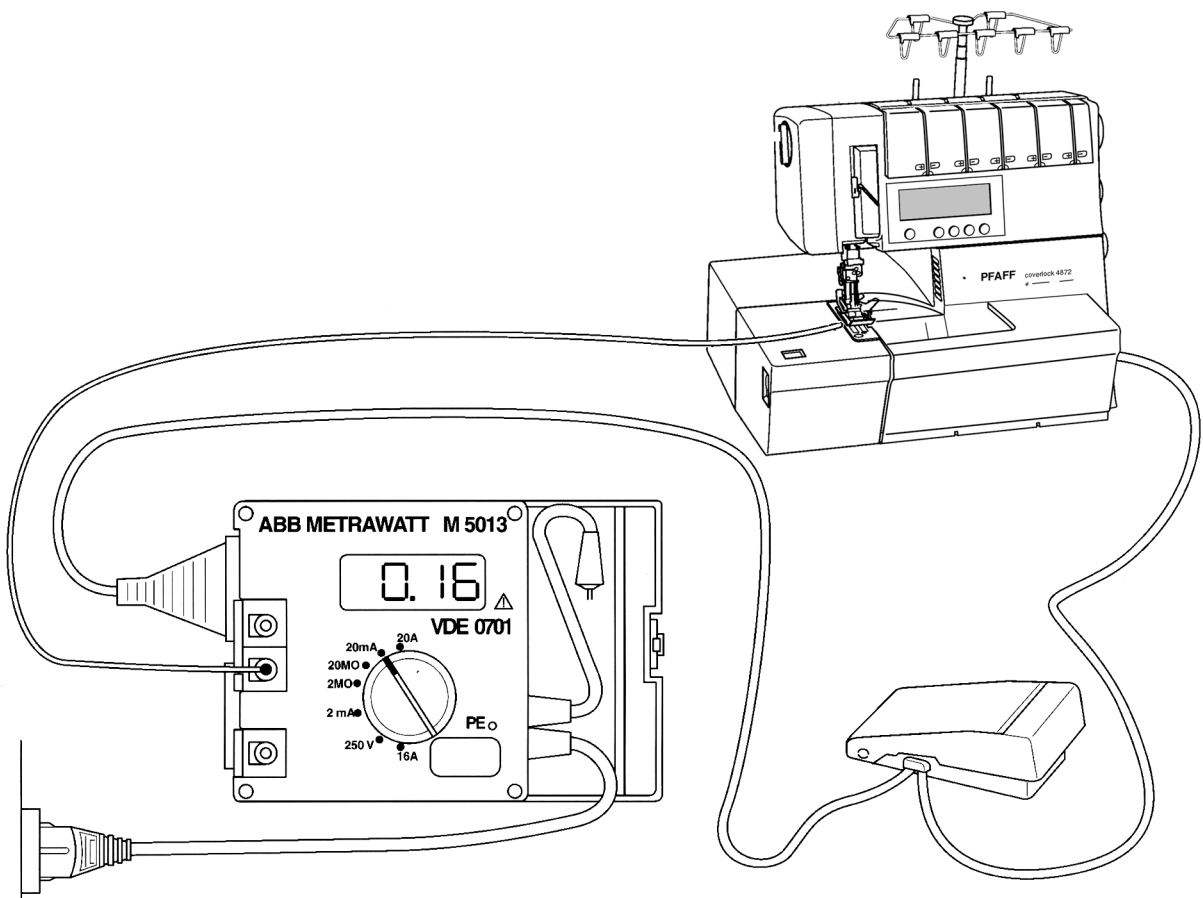


Fig. 73

34. Measures to be taken in the case of inadmissible test values

I:

If one of the 4 test functions is a failure, the ground mains socket is defective.
Inform your landlord.

II:

If the current consumption deviates considerably from the indicated value, although the machine does not bind, the motor is defective and must be exchanged or repaired.

III:

If the insulation resistance drops below the required value, the defective components must be found by systematic checking and must be repaired or replaced.

IV:

Here also, the components with inadmissibly high leakage current must also be found by systematic checking and must be repaired.

76227 Karlsruhe, 7th December 1998

PH/HTS

PFAFF

PFAFF
Gritznerstraße 11
76227 Karlsruhe

Fernruf (0721) 40010
Fernschreiber 7825638
Drahtwort Pfaffwerk
Telefax (0721) 4001513

Druckerei Gablenz GmbH
Stettiner Straße 17
76356 Weingarten

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